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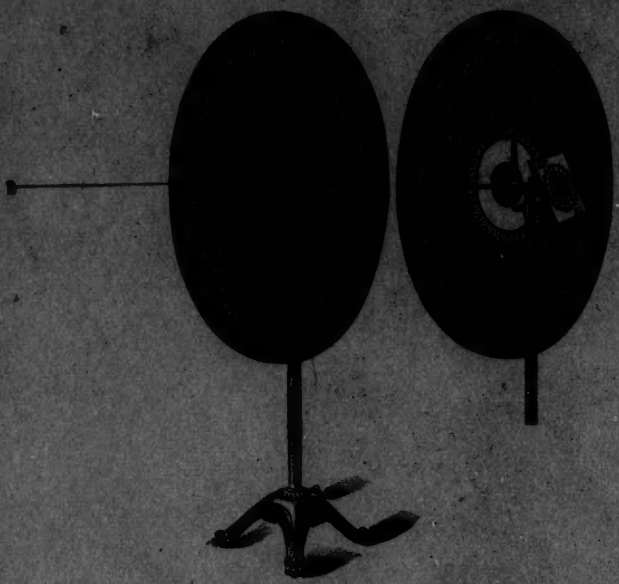

## A NEW SCOTOMETER.

By COL. R. H. ELLIOT, I.M.S.

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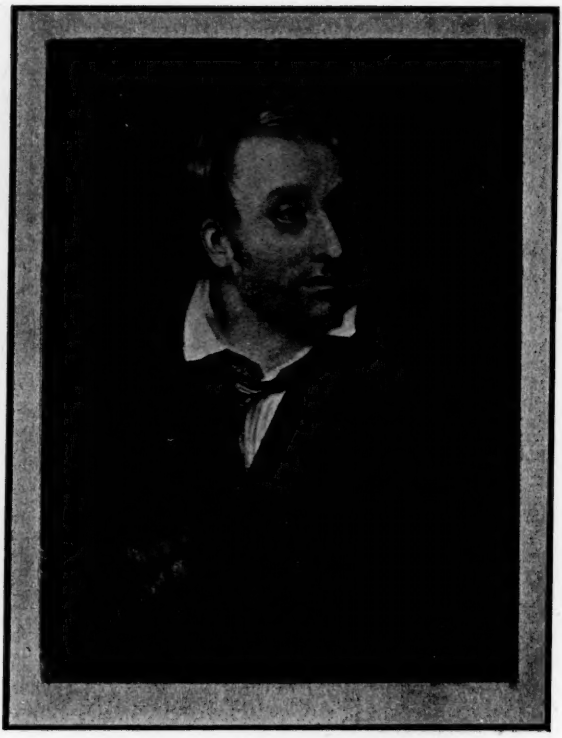

*From a portrait by Geddes*

JAMES WARDROP, F.R.C.S.

(1782-1869)

o face page 401.

THE BRITISH JOURNAL
OF
OPHTHALMOLOGY

AUGUST, 1918

## BRITISH MASTERS OF OPHTHALMOLOGY SERIES

### 6.—JAMES WARDROP, F.R.C.S.
(1782-1869)

BY
WILLIAM GEORGE SYM,
EDINBURGH.

THERE is a small district some twenty miles or so from Edinburgh which has a wonderful record as the birthplace of medical worthies, for within this area were born the two Hunters, John and William, Matthew Baillie, Sir James Young Simpson, and the subject of the present sketch, James Wardrop. Wardrop belonged to a family of better descent than did some of the others; he was the youngest child of James Wardrop and Marjory Marjoribanks, daughter of Andrew Marjoribanks of that ilk, and was born at Torbane Hill, a small property, near Bathgate, which had for many generations belonged to his ancestors; the date of his birth was August 14, 1782. The chief part of his schooling he obtained at the High School of Edinburgh; and later, when he proposed to join the medical profession, he was bound apprentice, in accordance with the custom of that time, to his uncle Andrew Wardrop, a surgeon of some eminence in Edinburgh. Like all good surgeons, James Wardrop became first a good anatomist, and for his thorough grounding in this department he was indebted to the well-known anatomist Barclay, whom he assisted for a time during the period of his apprenticeship. After a

little time, however, desiring to obtain a wider acquaintance with the views and practice of other leaders in other places, he went to London (in 1801), where he attended the lectures of Abernethy, Cline, and Cooper, and worked in St. Thomas's, Guy's, and St. George's Hospitals; having spent some couple of years or so in such a manner, he passed on to Paris, then the most famous medical school on the Continent. But Paris in 1803 became, as modern military slang would put it, very "unhealthy" for a Briton; however, young Wardrop, after not a few more or less exciting adventures, managed to elude Napoleon's secret police and to escape from France to Vienna.

This visit was of much importance in reference to the further course of his life, for it was not a little owing to the interest aroused in the young surgeon by his attendance on the lectures on ophthalmology given by the illustrious Beer, whose *cliniques* he closely followed, that Wardrop acquired the taste for the study of disease of the eye, which never afterwards left him, and which dominated his life-work. In 1804 he returned to Edinburgh, where, having obtained the Fellowship of the College of Surgeons, he devoted his attention chiefly to surgery, pathology, and diseases of the eye. At this time he assisted in the formation of the museum of the College, then in its infancy, and found in this work gratification of his zeal, enhancement of his knowledge, and a fine scope for his manual dexterity and neatness: a number of his preparations are still on the shelves. Wardrop did not, however, remain very long in Edinburgh; perhaps he found no real opening; perhaps he was ambitious to fill a larger sphere; so he made his way to London in 1808, where he took up his abode at No. 1, Charles Street, St. James's, in which he lived till his death in 1869. He was admitted to the membership of the English College of Surgeons in 1814, the Master (Sir Everard Home) making the complimentary statement that his published work was quite sufficient to entitle him to the diploma; his Fellowship was not taken till 1843. In 1818 he was appointed surgeon-extraordinary to the Prince Regent, in whose train he came to Edinburgh in 1823, after the Prince's accession to the Crown; and when Sir Astley Cooper was raised to the rank of serjeant-surgeon, Wardrop became surgeon-in-ordinary to King George IV. On that occasion he was offered a baronetcy, but this honour he declined, principally on financial grounds. At a later time, during the last illness of George IV, Wardrop considered himself to have been somewhat unfairly treated by certain of the physicians attached to the Court, and his expressed opinions to have been somewhat cavalierly put aside; he took the matter very seriously to heart, and withdrew himself from the whole Court connection. It would prove a thankless, a difficult, and probably a useless task to attempt to discover at this distance of time who the chief offender

may have been and to rake over again the cold ashes of this long-gone controversy over a trifle, but Wardrop seems to have been at least so far in the right of it that Sir William Knighton, when he himself lay a-dying, expressed his earnest wish to see him for the purpose of apologizing for his own share in the affair, and of indicating his high opinion of Wardrop personally, and his own sincere desire to be reconciled to him before his death.

Wardrop took an unusual step in 1823, for in that year, along with Sleigh, he founded a hospital of his own, in which he continued to operate, to see poor patients, and to lecture for about ten years; but the expense of keeping it up was too great, and he had to abandon the scheme after a time. One peculiar feature of the teaching at this school, which they called the West London School of Surgery, was that it was free to any practitioner who cared to come to it, and we may be sure that the *cliniques* and discussions on the cases of patients sent in for treatment were sound and valuable in their day. Nor was this Wardrop's only experience of teaching, for he associated himself for a time with Sir W. Lawrence in the Aldersgate Street School of Medicine, and subsequently joined the Hunterian School in Great Windmill Street as lecturer on surgery. There is no doubt that in his day Wardrop enjoyed a high reputation both in general surgery and as an ophthalmic surgeon. In the former branch his work on Aneurism brought him into great prominence, and in the latter capacity his books on "Fungus Haematodes" and on the "Morbid Anatomy of the Eye," marked a great advance on our previous knowledge. As he published also a book on "Diseases of the Heart," which was well thought of, he must have been a little of the type of the general specialist. But in addition to this lecturing, his writing, his hospital and private work, he was a great society man; he had numberless acquaintances and friends among society, even of the hightest rank; indeed, he might, without exaggeration, be described as an intimate friend of George IV, both when he was Regent and after he had succeeded to the throne. Another interest in his life was that he was a great lover of horse-flesh and an excellent judge of an animal; indeed he published a little book on the treatment of diseases of the eye in horses.

He married Miss Margaret Dalrymple, daughter of Col. George Dalrymple, North Berwick, by whom he became the father of four sons and one daughter. He has a number of descendants of the third generation living to-day, to one of whom we are indebted for some of the information we have given, and who is the possessor of two fine portraits of him, one of which is reproduced in this issue. There are in all three oil paintings of him, by Joy, by Raeburn, and by Geddes. It is the last of these which has been chosen for reproduction, as representing Wardrop at the time when he was at

the height of his reputation and of his professional activity. Of his sons the only one to enter the medical profession was his eldest (James), who became surgeon in the 7th Hussars, and subsequently in the Grenadier Guards, with which regiment he served through the Crimea.

If there is one feature more than another which strikes the modern reader of some of the older authors of medical books, it is the accuracy of the clinical descriptions. These older writers possessed none of the extraneous means of investigation: no ophthalmoscope, for example, no tonometer; no Wassermann had yet appeared, no perimeter was invented, the microscope was in its infancy. Yet the clinical descriptions of the naked eye aspect of their cases it is oftentimes a joy to study. This statement applies to Wardrop's work as fairly as to some others' of his time; notably it refers to his description of night-blindness and of fungus haematodes. If anyone should imagine that it is in his generation that wisdom arose, let him read in the older writers; if he feels pessimistic, as one is apt to do, regarding our poor advance in the knowledge of disease, let him study them further, and he will find that till he comes to the deductions to be drawn from the observations there is little indeed to add except the particular points of precise mensuration which can only be supplied by modern instruments and tests, and these in truth form an advance which affords us great and solid advantages as compared with our ancestors; but for all that, within their possible area the older observers were not easy to beat.

Wardrop's two most important works, at least from our point of view, are his "Morbid Anatomy of the Eye" and "Fungus Haematodes." We may do well to quote a few sentences from the preface to the former: "The object of the following essays is to describe the various morbid alterations in the structure of the human eye, and to illustrate by engravings those which are most remarkable. In the accurate view which Dr. Baillie has given of the morbid anatomy of some of the most important parts of the body, the diseases of the eye are not described; and as no attempt has yet been made in this country to treat of the pathology of this organ, little apology seems necessary for the present undertaking. Several excellent practical treatises and detached essays have indeed been at various times published, but during the last thirty years the diseases of the eye do not appear to have excited the same attention in this country as on the continent of Europe." After mentioning several books, "None of these authors have, however, delineated the morbid changes of structure which they have described; a few drawings only are to be found in the works of Beer and Scarpa, and in some periodical publications. The importance of a work, the object of which is to supply these defects, is sufficiently obvious." The book is in two volumes of about 400 pages

altogether, and is furnished with a number of coloured diagrams, which, though of small size, are of admirable beauty and fidelity, and are quite equal in their way to those in any modern text-book. The preface, as will be seen from the quotation given, amply justifies the appearance of the book. Its title, however, as the phrase would be understood now-a-days, is, perhaps, a little misleading, for there is not a great deal of anatomy in it; there is more of clinical observation and of reference to the cases related by other surgeons. Some of the statements, it must be confessed, read very strangely to-day. We may give three examples: "Though no muscular fibres can be demonstrated in the iris of the human eye, yet from the motions it performs, their existence can scarcely be doubted" (p. 25). "Throughout the animal kingdom, those animals who have two or more eyes, employ them to extend their sphere of vision, but man makes use of both eyes chiefly as one organ, little advantage being probably derived from being endowed with a pair, except that of diminishing the risk from injuries and disease" (p. 244). "There is a part of the retina called the macula lutea discovered by Sömmering which has been observed only in the human eye, and the functions of which have not been even conjectured" (p. 145).

It is curious to note, too, that even so late as the date of this book, the darkness surrounding amaurosis and squint was so impenetrable; one is brought forcibly to realize how the ophthalmoscope is essential to any comprehension of the former, and a clear idea of refraction to the explanation of the latter.

In his "Fungus Haematodes," too, we see how the question of the decussation of the optic nerves was still a moot point: "As, from the dark colour of the diseased parts, this was a favourable case for ascertaining whether the optic nerves decussate with each other or merely come in contact, I examined carefully the state of these parts. . . . This dissection clearly proved that the nerves did not in this individual cross each other. I would be, however, inclined to believe, from what I saw, that the optic nerves were joined to each other by interposed nervous substance common to both." For all that, "Fungus Haematodes" is an excellent book which displayed at once the author's earnest purpose and his knowledge of the existing pathology. From the preface to it let us quote a sentence: "In the following observations it has been my great object to point out the anatomical structure of the fungus haematodes, and to fix precise limits to the import of the name, to bring under one general view a considerable number of facts, the greater part of which have fallen under my own notice, along with others which have been communicated to me by my medical friends, or which are to be found insulated (*sic*) and not arranged in the works of different authors,—and also to describe the disease in

particular organs where it has not been hitherto known to exist." Not even a twentieth century writer could set before himself a wiser or more philosophic aim.

One point in which Wardrop and the writers of his day were able to excel most of those of our time, was in the elegance of their diction. Take the dedication of one of his books to Sir James Simpson; for a neatly turned compliment, for frank admiration with avoidance of fulsome flattery, for an honest and self-respecting tribute from a disciple to a master, you will find it hard to beat.

Would that more of *our* medical writing could with as much justice be described as literature!

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# OBSERVATIONS ON EYE CONDITIONS MET WITH IN MALTA, 1916-1917,

## Occurring among British troops in the Balkans and Malta Garrison.

### The Montgomery Lecture, 1916-1917*

BY

EUPHAN M. MAXWELL, M.B., F.R.C.S.I.

I wish in the first place to express my thanks to Major Kiep, R.A.M.C., in charge of the Ophthalmic Department, St. George's Hospital, Malta. During the time of preparing this paper he afforded me every opportunity for the examination of his patients and reference to his case books. To many of his own personal observations and comments I am deeply indebted.

The cases observed have been mainly of diagnostic interest, acute conditions being usually treated in Salonica, while those of a chronic nature were frequently transferred to England in the course of treatment.

I am classifying the cases as follows:—

1. Ocular conditions associated with general disease.
2. Ocular conditions arising from traumata.
3. Visual acuity viewed from the military stand-point.

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## 1.—Ocular conditions associated with general disease

### A.—Malaria.

1. *The Conjunctiva.* Excluding the transient hyperaemia frequently present with any pyrexia, no affections of the conjunctiva,

*Read on November 28, 1917, in the School of Physic, Trinity College, Dublin.

associable with malaria, were met with. This experience tallies with that of other observers.[3, 21]

2. *The Cornea.* Two conditions associated with malaria were observed.

The first of these was a superficial keratitis, which in the majority of cases showed signs of a herpetic origin. None of the corneae in the herpetic cases showed vesicles. Some had reached the stage of dendritic ulceration, while others had advanced to scar formation. These scars were mostly arborescing or arranged in the so-called "string of beads form." The remaining cases were of a more diffuse and indefinite type.

The pathology of "herpes corneae," as of "herpes febrilis" elsewhere, is unknown. It is possibly due to a toxic affection of the peripheral nerve endings; in the case of the cornea possibly also of the sensory portion of the ciliary ganglion. It has no connection, apparently, with a pathological condition of the Gasserian ganglion.[1, 18]

Herpes corneae has been observed in various pyrogenetic conditions, and other states of lowered resistance. Uhthoff, consulting ophthalmologist to the Sixth German Army Corps, reported it as constituting 25 per cent. of all cases of keratitis arising among the troops at the front. He attributes it to disordered metabolism, following strain and exhaustion.[16]

As a complication of malaria it has been mentioned by several writers.[3, 9, 13, 21] Kipp, of Newark, N.Y., stated that nine out of every ten cases seen by him had a malarial origin.

That the parasite is the direct cause may readily be disputed. Ellett, as quoted by Yarr, failed to find it in scrapings from affected corneae in patients showing it in their blood. This is no proof, however, against the possible action of a specific malarial toxin. If such be the primary factor in these cases, other secondary factors, as sun, glare, dust, and the general action of a pyrogenetic toxin, doubtless play a part.

Forty-four cases of superficial keratitis in malarial patients were observed during the period. No definite statistics were available, but Major Kiep has estimated the condition as occurring in a fractional percentage of the malarial cases seen in the Malta hospitals.

It must be admitted here that in some instances the diagnosis of malaria made in Salonica was based on clinical evidence alone. The great majority of cases, however, had the diagnosis microscopically confirmed. Thirty of the cases showed strong evidence of a herpetic origin; one-third of these reported an almost simultaneous eruption elsewhere on the face. They occurred mainly in the months of August and September, a season when, it should be noted, herpetic eruptions are not uncommon.[18]

The general condition of the patients suggested the benign variety of malaria. It is noteworthy that Castellani and Chalmers mention herpes labialis as a complication in benign tertian, and do not do so in writing of the malignant type.[3]

Of the forty-four cases all were unilateral. Seven gave a definite history of previous corneal trouble, and fourteen an indefinite history of a former eye affection.

The time of incidence from the malarial attack ranged roughly from one to twenty days. The average date was the sixth day.

The details in the following cases are especially illuminating.

1. *Lt.: Line Regt.*
   12 August, 1916. Malarial attack on Balkan Front.
   20 August, 1916. Herpetic eruption right lip, left lower eyelid.
   27 August, 1916. L. E. "inflamed."
   7 *September* seen by us. Left cornea showed typical dendritic ulceration.
   There was a very definite negative history of previous eye trouble.

2. *Capt. M., R.A.M.C.*
   September, 1916. Malarial attack on Balkan Front.
   February, 1917. Second attack.
   March, 1917. Third attack. During the febrile stage developed bilateral "conjunctivitis." R.E. rapidly cleared. L.E. became more painful and resisted treatment. No facial herpes.
   May 19, 1917, seen at St. George's. L.E. typical dendritic ulceration.
   Definite negative history of previous eye trouble.

3. *Capt. G., R.A.M.C.*
   1893. R. E. Keratitis ("phlyctenular").
   1907. Enteric fever. Herpes facialis. Right cornea "inflamed" for four weeks.
   August 1915. Severe cold. Herpes facialis. R. E. keratitis.
   July 13, 1916. Malaria on the Balkan Front.
   July 19, 1916. R.E. affected. Bilateral facial herpes.
   August, 1916. Seen in Malta. R.E. typical dendritic ulceration.

Case No. 3 was not seen by me personally. Major Kiep reported the details in a lecture delivered to the profession in Malta, in March, 1917.

These cases all ran a prolonged course, with frequent recurrence of loss of corneal epithelium, and persistent hyperaemia and photophobia. The majority were invalided home before a cure was effected. In the few quiescent cases seen, the nebulae were faint, and visual acuity but little interfered with. The local treatment consisted of atropin, argyrol, and bandaging.

The second corneal condition noted was an interstitial keratitis, which we described as "discoid." The infiltration, circular in shape, was centrally situated. No corneal vascularity was observed with focal illumination. A similar form of keratitis has been mentioned by several writers as a complication of malaria.[3, 9, 21] Castellani and Chalmers describe it as "a central parenchymatous infiltration of the cornea."

Proof of the presence of the parasite in the lymph spaces, or of the direct action of a malarial toxin, is wanting. An examination in

the living subject of the aqueous humour might possibly throw some light on the question.

Four cases were observed, the details of which are as follows:

1.

| | |
|---|---|
| October 2, 1916. | Malaria on the Balkan front. |
| October 14, 1916. | R.E. red and painful. Definite negative history of previous eye trouble. |
| November 8, 1916. | Examined at St. George's. R.E. deep seated circular corneal infiltration, centrally situated. Periphery of infiltration denser than centre. Circumcorneal injection. Photophobia. Wassermann test—negative. |

2. L.

| | |
|---|---|
| July 28, 1916. | Malaria on the Balkan front. |
| August 1, 1916. | R.E. "inflamed." An indefinite history of transitory attacks of "redness" in R.E. since coming east. These attacks did not affect the vision. |
| November 8, 1916. | R.E. "discoid keratitis." Marked circumcorneal injection. V. of R.E.=hand movements. Syphilitic history negative. Wassermann test not performed. |

3. H.

| | |
|---|---|
| December 28, 1916. | Malarial attack on the Balkan front. |
| January 6, 1917. | L.E. affected. Definite negative history of eye trouble. |
| February 12, 1917. | Examined at St. George's. L.E. "discoid keratitis." Circumcorneal injection. Several instillations of atropin required to produce complete mydriasis. V. 1/60. |
| March 1. | Wassermann test—negative. |
| April 11. | L.E. No external congestion—no signs of absorption of infiltration. |
| May 21. | V. of L.E. with + 3 = 6/18. Some absorption of infiltration since last date. |
| September 12. | No further change. |

4. W. R.A.M.C.

| | |
|---|---|
| Autumn, 1916. | "Fever" on the Balkan Front. For subsequent relapses, took quinine on his own initiative. |
| February, 1917. | "Went sick" with R.E. Case sheet labelled, "Keratitis with corneal staining and iritis." |
| March 26. | Examined at St. George's. R.E. "discoid keratitis." Small corneal abrasion, obviously secondary condition. Circumcorneal injection. |
| April 12. | Febrile attack—blood films negative as regards malaria. |
| April 17. | Blood smear taken during rigor showed benign tertian parasite. Intramuscular injection quinine 12 gr. reduced temp. and caused marked improvement in R.E. Later a second intramuscular injection caused further decrease in redness and density of infiltration R.E. |
| May 7. | Wassermann test—negative. |
| May 21. | V. of R.E. with + 2 = 6/60. Eye quiet. |
| Sept. 12. | No further change. |

In this case it may almost be taken for granted that the original fever was malaria. Only three or four cases of malaria during the past year, apparently contracted on the island, have been noted. Infecting mosquitoes may conceivably be conveyed to Malta on ships. The presence of a hitherto uninfected anopheles on the island, has been surmised, but not, so far as I am aware, proved.

These cases all ran a prolonged course, hyperaemia and photophobia persisting for weeks. Secondary uveal involvement, if present, was very slight. The ultimate decrease in visual acuity was considerable owing to the central position and original density of the infiltration.

We noted several instances of diffuse interstitial keratitis in malarial patients. The cases showed typical clinical signs of congenital syphilis and afforded positive Wassermann tests. Malaria may conceivably have acted in these cases as a precipitating factor.

3. *The Sclera.*—Two instances of episcleritis occurring within two to four weeks of a malarial attack were noted by us. One of the cases afforded a positive Wasserman test.

They both ran a prolonged course, punctuated with frequent relapses; neither showed any direct response to quinine.

I have seen no mention of scleral involvement in malaria in the available literature.

4. *The Uvea.*—I observed no case of acute uveitis associated with malaria. Several cases of chronic iritis were noted in malarial patients, but the history of the date of onset was too vague to suggest an association. Furthermore, other likely causes, notably syphilis, could usually not be eliminated.

Several writers mention uveitis as a possible complication in malaria [3, 9, 21]. From the paucity of cases which came to our notice, it would at least appear evident that the malarial parasite has no predilection for the uvea. Castellani and Chalmers record its finding in the larger choroidal vessels, but make no mention of the iris or ciliary body.

5. *The Lens.*—I have seen no cases of cataract associated with malaria. Bagot, of Guadeloupe, quoted by Yarr, records two such. Yarr, himself, regards the association as accidental [21]

6. *The Optic Disc and Retina.*—I have a record of seven cases of definite optic neuritis and about ten showing merely a hyperaemia of the nerve head, in malarial subjects. They were all binocular.

As defective vision was not a symptom in the majority of instances, the date of onset was generally obscure. One therefore can only conjecture the possibility of a malarial causation.

The following amongst the cases gave definite histories, and we are in them justified in regarding malaria as a very probable cause.

1. R.

| | |
|---|---|
| August 18, 1916. | Malaria on the Balkan front. Later had a relapse, shortly after which complained of headaches and defective vision. |
| October 27. | Examined at St. George's. V. of R.E. 6/12, of L.E. 6/18. Slight swelling of both discs. Exudations and small haemorrhages around both discs. |
| | Later, tuberculin and Wassermann tests, also repeated urinary examinations, proved negative. |

| | | |
|---|---|---|
| | December 12. | No further febrile attacks.<br>V. of both eyes 6/9. Disc margins still slightly blurred. No fresh haemorrhages. |
| 2. | Fl. | |
| | June, 1916. | Malaria on Balkan front. Later, numerous relapses. |
| | May, 1917. | Sent to Malta. |
| | July, 1917. | Complained of photophobia. |
| | August 22. | Examined at St. George's. V. of R.E. with $+0{\cdot}5 \supset +1$ —6/6. V. of L.E. with $+0{\cdot}5 \supset +1{\cdot}5 = 6/6$. Both discs hyperaemic, blurred margins, congested veins. |
| | September 4. | Malarial attack. |
| | September 7. | Condition of discs more pronounced. |
| 3. | Fe. | |
| | 1916. | Malaria on Balkan front. Ring parasite detected in blood in Salonica. Noticed defective vision shortly after attack. Mild attack of "Flexner" dysentery about same time. |
| | December 1916. | Came to Malta, marked anaemia. R.B. cells 750,000 per cub. mm. Hb. 35 per cent.<br>Large spleen. |
| | February 17, 1917. | Examined by Capt. Kiep. Double optic neuritis. Numerous intra- and pre-retinal haemorrhages. |
| | March 8. | Discs normal. Haemorrhages almost completely absorbed. Patient able to read small print. |

Case No. 3 was not seen by me personally. It was reported by Major Kiep in the lecture previously mentioned.

I observed two cases of retinal haemorrhages unaccompanied by optic neuritis in malarial patients.

| | | |
|---|---|---|
| 1. | B. | |
| | July, 1916. | Malaria on the Balkan front. |
| | September, 1916. | Reported defective vision. Major Usher in Salonica noted "retinal haemorrhages both eyes." |
| | October 23. | Examined at St. George's. V. of both eyes, 6/6. L.E. small haemorrhages along course of inferior nasal vessels. No syphilitic history. Cardiac and renal systems, nothing to note. |
| | October 31. | Febrile attack.<br>Benign tertian parasite found in blood. |
| | November 1 | No fresh haemorrhages L.E. Old ones absorbed. |
| 2. | | |
| | September, 1916. | Malaria on Balkan Front. Shortly after, erythropsia for two days. |
| | October 25. | Examined at St. George's. R.E., two small retinal haemorrhages just above macula. |
| | November 5. | Haemorrhages almost disappeared. |

Optic neuritis has been recorded as a malarial complication by several authors.[1, 3, 10, 20, 21] Probably usually due to a circulating toxin, it may also occasionally result from a mechanical plugging of the capillaries by the parasites. Retinal haemorrhages would appear from the literature to be especially associated with malignant malaria.[3, 10] Yarr mentions two types, the first consisting of large central haemorrhages, the second of small peripheral ones; the latter type is commoner. I have myself observed none of these small peripheral haemorrhages, but realize that such might be readily overlooked.

Two cases of secondary optic atrophy occurring in malarial patients were noted. Both complained of defective vision some months after coming East. In both the diagnosis of malaria was microscopically confirmed. Neither gave histories of other recent illnesses. Wassermann tests were negative.

During the period we examined about twenty cases of reputed night-blindness occurring in malarial patients. None of them exhibited any ophthalmoscopic signs. This condition has received considerable attention during the war; its frequent detection is doubtless due to the large amount of night work which is being done by men previously unaware of their disability. At the same time many cases have arisen, conceivably the result of debilitating conditions, amongst which malaria must be reckoned. The selective action of quinine toxin on the rods has been mentioned recently by Ballantyne in the BRITISH JOURNAL OF OPHTHALMOLOGY. Such a possible cause of night-blindness must not be overlooked in cases receiving a prolonged course of the drug.

In our cases tonics, such as iron and arsenic, with the use of dark glasses, were recommended. The prognosis would appear to be favourable with a return to health.

(7) *The Nervous System.*—Neuralgias and paralyses have been mentioned as frequent symptoms in the so-called "masked malaria."[3]

Amongst the neuralgias, we found frontal headache very prominent. Refractive errors undoubtedly aggravated the condition, but as with a return to health the headaches tended to diminish[2] correcting glasses were seldom necessary.

Writers mention an affection of the third nerve resulting in paresis or spasm of the ciliary muscle.[3, 21] No gross examples came to our notice; mild cases may readily have escaped observation.

In concluding the subject of malaria, it may be noted that during the period only one case of genuine quinine amaurosis, to my knowledge, was observed. I am not aware of the details. The absence of these cases is of interest when we take into consideration the fact that doses of quinine up to 60 grs. in the 24 hours were given in many instances.

**B.—Dysentery.**

The great majority of cases occurring amongst the troops in the Balkans and Malta Garrison were bacillary in type. Of the cases of amoebic dysentery noted, several patients were known to have originally acquired the disease in Gallipoli.

The occasional occurrence in bacillary dysentery of an articulo-ocular syndrome was first brought to our notice by Col. Garrod, C.M.G., A.M.S.

The ocular manifestations were conjunctivitis and anterior uveitis.

The conjunctivitis was metastatic in character, marked by a considerable hyperaemia with little or no external discharge. It usually disappeared in five or six days. Its occurrence in bacillary dysentery has been recently noted by several French writers.[5, 11]

I have a note of six cases of involvement of the conjunctiva in dysenteric patients. Five of these were definitely bacillary in type; of the sixth I have, unfortunately, no record.

Four of the cases were accompanied by arthritis; three of these showed definite signs of anterior uveitis.

In a recent publication on dysentery in Malta, Major Graham, R.A.M.C., pointed out that some of these cases of conjunctivitis may readily be accompanied by a mild, and, therefore, difficult to diagnose, cyclitis.

Six cases of anterior uveitis occurring in dysenteries, the result of a Shiga infection, were noted and recently published by us (BRITISH JOURNAL OF OPHTHALMOLOGY, February, 1918). Two of these cases, which are included in the instances mentioned above, showed conjunctival involvement in the early stages.

As in the case of the similar syndrome in gonorrhoea, the aetiology of these joint and ocular manifestations is obscure.

The negative findings of dysenteric or other organisms in the joints is suggestive of a toxic origin.

In Case 2 of our previously published series, a Gram-positive coccus was cultivated from the iris. Major Arkwright, R.A.M.C., who made the examination, told us that it was of a type commonly found in the intestine and allied to the streptococcus of rheumatism. He suggested that it might have gained access to the circulation through one of the dysenteric lesions in the intestine. Iritis is not uncommon in sub-acute rheumatism and septic conditions of the digestive tract where the streptococcus is frequently the cause: the streptococcal group may conceivably have a predilection for the uveal tract.

Against the probability of such a secondary infection in the case of the joints, is the improvement which follows the administration of anti-dysenteric serum.

In only two cases with eye symptoms do I know of the administration of serum, but here also the improvement shown was in favour of a primary dysenteric infection.

One of these cases was No. 3 of our published series, the other was a very recent case of cyclitis and conjunctivitis associated with a "Flexner" infection contracted on the Island. Here the external ocular congestion is stated to have considerably diminished within about forty-eight hours of the injection.

The immediate prognosis in these ocular conditions is apparently favourable. The question of the possibility of relapse has yet to be answered.

Two cases of corneal involvement in dysenteric patients, type unknown, were noted. One of these showed a superficial ulceration, very prone to relapse, the other interstitial degenerative changes.

In neither was the history definite enough to do more than suggest remotely an association.

Keratitis, as a complication in dysentery, has been mentioned by Castellani and Chalmers.[8]

### C.—Nephritis.

A mild epidemic of nephritis occurred amongst the British Troops in the Balkans during the spring and early summer of 1917.

The only ocular complications we observed in connection with it were neuro-retinal changes.

I examined the fundi of thirty-four cases. Of these one gave a recent history of pneumonia, three of malaria (one of these had also had a recent attack of diphtheria), and four recorded previous kidney trouble in England.

There was no ascertainable cause in the case of the remaining twenty-six whose condition may be denoted by the useful term "War Nephritis." This is regarded by some observers as an entity, infective in character and possibly due to some specific group of organisms. Researches on the subject have hitherto proved negative. In an article in the *Lancet*, September 15, 1917, Sundell and Nankivell suggest that it may be due to some error in metabolism the result of dietary deficiency.

In my group of cases the main initial symptoms were dyspnoea, headache, and general fatigue. Oedema of the face and extremities, haematuria, and a low degree of pyrexia of short duration, were present in most instances. Prolonged albuminuria was noted in all these cases. Not less than ten patients were invalided home, passing albumen twelve weeks after the onset of the attack. The average date of its cessation in those who remained under observation was roughly eight weeks.

Five of the patients complained of defective vision, noticeable some little time after the attack. The details are as follows:

1. E.

| | |
|---|---|
| Feb. 10, 1917. | Reported sick on the Balkan Front. Labelled "Nephritis." |
| End of February. | Defective vision for about twelve days |
| March 12. | Reported in Salonica "slight retinal changes." |
| April 14. | Examined at St. George's. V. of both eyes 6/6. Discs—hyperaemic—traces of fibrous tissue around margins. |
| May 17. | Hyperaemia of discs diminished. Urine—nothing to note. Patient marked for Convalescent Camp. |

2. P. Age 38.

| | |
|---|---|
| February 24, 1917. | Reported sick on Balkan Front. Marked haematuria. |
| Middle of April. | Defective vision. |

| | |
|---|---|
| April 24. | Examined by us. R.E. "Macular Star." Disc margin blurred. Retinal haemorrhage—exudative plaques. Patient very debilitated—four grammes albumen to litre. |
| May 21. | V. of both eyes—fingers at two metres. No fresh haemorrhages in retina. One and a half grammes albumen to litre. |
| June 10. | V. of R.E. with $-1{\cdot}5$ = 6/18. V. of L.E. with $-2\bigcirc-0{\cdot}5$ 180°=6/12. Disc margins well defined except on nasal sides. No fresh haemorrhages; exudations everywhere absorbing; "Macular star" in R.E. less well defined. Half a gramme albumen to litre. |
| July. | Patient fit for transport home. |

3. H. Age 32.

| | |
|---|---|
| November, 1916. | Malaria—attack on Balkan Front. |
| End of 1916. | "Nephritis." |
| Beginning January, 1917. | Defective vision L.E. R.—anophthalmos. |
| February. | Examined at St. George's. L.E. disc cloudy; retinal haemorrhages and exudations. Marked haematuria and pyuria. |
| May 5. | V. of L.E. 6/9. Disc margins distinct; inferior temporal artery slightly constricted. Haemorrhages absorbed. Two minute white spots between macula and disc. Urine—nothing to note; patient convalescent. |

4. C. Age 38

| | |
|---|---|
| April 26, 1917. | Reported sick on Balkan Front. Defective vision lasting about a week. Cough, oedema, mild pyrexia, albuminuria. |
| May 14. | Haematuria noted. |
| July 3. | Albuminuria noted. |
| Sept. 20. | Examined at St. George's. V. of R.E. with —0'5 sph. = 6/6. Vision of L.E. with + 1/70°=6/6. Right fundus—nothing to note. Left fundus—upper temporal artery obscured in places near disc suggestive of recent haemorrhages or exudations. Patient convalescent. |

5. N.

| | |
|---|---|
| May, 1917. | Reported sick on Balkan Front, Albumen +++ |
| June 5. | Defective vision for about three days. |
| July 15. | Examined at St. George's. Fundi—nothing to note. |
| End of July. | Invalided home. Albumen ++ |

Four patients, none of whom had complained of defective vision, showed fundus changes.

6. S., age 40.

| | |
|---|---|
| February 12, 1917. | Reported sick on Balkan front. |
| March 22. | Examined at St. George's. Slight oedema of discs and neighbouring retina. Albumen+++. |
| May 12. | V. of R.E. with $+0{\cdot}5\bigcirc+1{\cdot}5$ 75° = 6/6. V. of L.E. with $+1{\cdot}5$ 60°= 6/9. Albumen++. |
| June 4. | Right disc normal. Left disc—nasal margin slightly blurred. Urine, nothing to note. Convalescent. |

7. B., age 40.

| | |
|---|---|
| February 5, 1917. | Reported sick on Balkan front. |
| March 22. | Examined at St. George's. Slight oedema of discs and neighbouring retina. Albumen++. |
| April 16. | V. of both eyes, 6/6. Fundi normal. Albumen++. |
| June. | Urine normal. Convalescent. |

8. Ne.
February 26, 1917. Reported sick on Balkan front: "marked haematuria."
April 25 Examined at St. George's.
Vision of both eyes 6/6. Both discs hyperaemic. Trace of fibrous tissue at upper temporal margins. Urine, nothing to note. Convalescent.

9. Sh.
This patient showed a patch of atrophied choroid surrounded by pigment in periphery of left fundus, when examined six weeks after onset of nephritis. Subsequent examinations showed no change. In the absence of any recent signs the condition can hardly be attributed to the nephritis.

*A survey of these cases shows:*

First.—That neuro-retinal changes were not infrequent. The oedema is probably analogous in its pathology to renal oedema elsewhere. Had more cases been examined in the early stages, it would doubtless have been more frequently detected. Whether the grosser changes were merely a question of degree, or due to a different toxin, is quite obscure. Second.—That the prognosis as regards the restoration of the retinal function was excellent. Third.—That, granted the cases were more or less severe in type, and all of prolonged duration, the neuro-retinal changes were not of any additional serious prognostic import. This statement might readily require modification with a further knowledge of the ultimate course of the cases.

*(To be continued.)*

## ON CASES OF ACUTE ANTERIOR ETHMOIDITIS IN YOUNG SUBJECTS

BY

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IN my experience, the form of orbital suppuration described in this communication is tolerably common in young children, although there are grounds for believing that the essential nature of the condition is by no means always recognized. It is not rare for a young child or even a baby to be brought to the casualty department with a swelling of the lids of one eye, and a statement that he has been "out-of-sorts" for a day or two. Unless the two eyes are compared with respect to prominence, the fact is likely to be overlooked that the eye of the affected side is more or less prominent. The condition goes unrecognized as an instance of orbital suppuration. Many of the milder cases get well under simple treatment, or, indeed, in the absence of any treatment. With or

without a discharge of pus from the nostrils or into the nasopharynx, the orbital and associated symptoms subside forthwith. But a certain number of the cases find their way at a later stage into the eye department, with the obvious manifestations of what is rather loosely called "orbital cellulitis" or "orbital suppuration," as shown by tenderness, oedema, and redness of the eyelids, chemosis, and protrusion and impaired motility of the eyeball, which is usually displaced downward or downward and outward. The condition, in my experience, is always unilateral. General symptoms, as raised temperature, headache, vomiting, *malaise*, and so forth, are usually present in the more severe or acute cases. As a rule, there is no history of injury or of erysipelas, or, for that matter, of any illness, general or local, except such as may be reasonably supposed to arise from the orbital condition. I have been specially struck with the absence of any history of coryza in the patient.

I have become convinced from my clinical observations that the eye symptoms in the group of cases under discussion can be best explained by an acute inflammation of the anterior ethmoidal cells, although in certain of the more severe cases (case No. 9) it is impossible to exclude an inflammation of the posterior ethmoidal cells also. From their relative frequency, and the difficulty or impossibility of finding any adequate description of them, I am of the opinion that these cases deserve to be classed as a separate entity. Another reason is that when seen by the ophthalmic surgeon, usually somewhat late in the attack, the diagnosis is almost certain to be that of "orbital cellulitis" or "orbital suppuration," without thought of what I am persuaded is the underlying factor.

So far as I have seen, the condition is not accompanied by any ophthalmoscopic signs, and in none of my cases has it been followed by atrophy of the optic disc. All the cases, however, were not examined in the early stages with the ophthalmoscope, and in some I had no opportunity of seeing the child after the acute symptoms had subsided. I have lost no patient from intra-cranial complications.

Rhinoscopic examination has been attempted in some instances, but the difficulties in children are considerable, a degree of expert knowledge (to which I can lay no claim) is advisable, and, all things considered, my results have amounted to very little.

Many of the cases get well under the simplest means. A cathartic (I am fond of prescribing a liberal dose, one drachm, of the compound jalap powder) followed by a continuous alcohol (6 per cent.) dressing over the lids of the affected eye bring many a case to a happy conclusion. Hot applications of boric acid often act well.

When symptoms are severe, or the general condition of the patient is threatening, surgical measures must be adopted. The usual procedure is to make an incision into the orbit over any spot which

seems to indicate the presence of underlying pus. If nothing escapes, the dressing forceps, with closed blades, are introduced into the depths of the wound, and the blades of the instruments are then separated more or less widely. In some instances, even when Hilton's method is employed, the immediate result is negative or almost so (case No. 1), but pus makes its appearance two or three days after the operation. The explanation probably lies in the fact that early in the case there is no distinct abscess-cavity, while later the fluid lies beneath the periosteum and has not been liberated by the incision. Several experiences of this kind (which are disconcerting, to say the least) led me finally to adopt as a routine measure a somewhat different procedure. Under general anaesthesia, a curved incision down to the bone was made over the inner angle of the orbit, extending from the root of the nose to the inner end of the eyebrow, previously shaved, of course. A small raspatory was then introduced beneath the periosteum, and by its aid the latter was raised from the bone over the region of the anterior ethmoidal cells, when pus usually escaped. The method is essentially the same as the preliminary steps of Jansen's operation for the relief of suppuration in the frontal sinus. If the simpler orbital incision be preferred, I would urge that, in the absence of distinct indications to the contrary, the incision be made over the region of the anterior ethmoidal cells.

I quote details of the following ten cases, selected from among a larger number:

## Cases

I.—*Anterior ethmoiditis in a child of two years; recovery after operation; condition followed by unilateral amaurosis; recovery of sight.*

A bright boy, aged two years, developed, without known cause, upon January 20, 1899, marked inflammatory oedema of the lids of the eye, so that they could not be opened voluntarily. The movements of the eyeball were abolished, and the globe was pushed forwards and outwards. The general symptoms were of a somewhat alarming character, for the child was semi-conscious, and evidently in great pain, the pulse was uncountable, and the temperature was 105° F. On January 23, when the symptoms, both local and general, had become worse, a deep incision was made through the centre of the upper lid into the orbit, and a very small amount of pus escaped when dressing-forceps were introduced into the wound thus made. Three days later, and for some days after that, a considerable amount of pus was found upon the dressings used to cover the orbit. Inflammatory symptoms receded quickly. The most curious part of the case, however, has yet to be related. On January 30, with a view to test the sight, the lids of

the affected eye were opened, the other eye meanwhile being covered up. As soon as this was done the child exclaimed, "Blind's down, daddy; all dark." The pupil was active, the media were clear, and the ophthalmoscopic appearances were normal. On another occasion, when asked where his nurse stood in the room, he said, "No; all dark." When the good eye was uncovered, however, he at once exclaimed, "Why, there's Norah!" (his nurse, who had been standing in front of him all the time). On February 17 it was noticed for the first time that the child could see with his right (affected) eye, the other being closed. This observation was confirmed next day by asking the child what he saw in his mother's hat. "Flowers and feathers" was the correct answer to this question. It was also found that the little boy could name various objects in his night-nursery without mistake or hesitation.

In 1906, when the lad was nine years of age, he was found to have V. of 6/5 in each eye, with the total hypermetropia (ID.) corrected. The fundi were normal.

Although I knew that amaurosis might very occasionally follow prolonged blepharospasm, and have met with the condition after phlyctenulosis and interstitial keratitis, I was unaware until the foregoing case fell under my notice that the blindness might be limited to one eye.

2.—*Anterior ethmoiditis in a child of four years, who had had a polypus removed from the nose. Resolution.*

A male child, aged four years, was seen on October 20, 1908, with the history that twelve months previously a polypus had been removed from the nose at St. Thomas's Hospital, and that he had developed measles five months before I saw him. At 3 a.m. on October 19 the child awoke his parents, crying with pain in his head and right eye. Since then he had been ill.

Upon examination, the lids of the right eye were seen to be red and swollen, and the corresponding side of the face was slightly oedematous. The caruncle was reddened. The eyeball was proptosed, and deviated a little outwards. Some limitation of movement of the globe, especially upwards. The child was apathetic, and looked ill. Temperature 100.2° F. It was noted that while the mucous membrane of the right nostril was reddened, that of the left nostril was pallid. No pus was found on rhinoscopic examination of the right middle meatus.

The orbital condition recovered after four days' rest in hospital, and treatment by purgatives and alcohol dressings.

3.—*Acute anterior ethmoiditis in a child of four years following a contusion. Resolution.*

A little boy, aged four years, was seen on March 1, 1903, at the Queen's Hospital for Children. The mother stated that the child

bruised the left side of his face yesterday, but the eye seemed to be all right last night, On awakening this morning, the lids of the left eye were swollen, so that the child was brought to the hospital. On admission, the upper and the lower lid of the left eye were swollen, and the oedema extended slightly on to the neighbouring parts of the forehead and cheek. The skin was reddened, but not particularly tender. No signs of wound or bruising of the parts. On separating the swollen eyelids, definite proptosis was found, with limitation of movement in all directions. No tenderness upon pressure over the rim of the orbit. No marked redness of the ocular conjunctiva, and no secretion from the eye. Cornea clear; pupil active; no effusion into the anterior chamber; ophthalmoscopic appearances normal. Child appears to be ill. Temperature 101° F.

Calomel (grs. 2) was given. The swollen lids were smeared with mercurial ointment, and hot fomentations were applied to them for twenty minutes every four hours. On the following day, the temperature was 98° F. and 98.4° F. The swelling of the lids was reduced, and the parts were less painful. On March 4, three days after admission, there was no proptosis, and the eyelids could be readily opened, although the globe was displaced slightly downwards and outwards. There was a feeling of slightly increased resistance in the upper and inner part of the orbit. No fundus changes. On March 9 the movements and position of the eyeball were normal. The temperature had been practically normal since the 2nd instant. No thickening could be felt in the orbit. On March 13 lad was discharged from hospital, and when seen among the out-patients five days afterwards, nothing wrong could be found in the left orbit or eye.

4.—*Acute ethmoiditis in a child of four and a half years. Resolution.*

A lad, aged four and a half years, was first seen at the Evelina Hospital on December 27, 1907. There was a history of measles two months ago, of eczema of the scalp two weeks since, and of discharge from the left ear for one week. It appears that the child attended the casualty department of the hospital as the lids of the left eye were swollen, and the child was crying with pain in the affected eye. The following is an extract from the notes of the casualty officer: "Has been attending as a casualty for some days. There was at first a tremendous amount of oedema of the cellular tissue of the lids of the left side. Cellulitis. Several punctures made with a needle, and swelling diminished considerably under fomentations. Guttae atropinae were used."

The patient was first seen by me on December 31, 1907, when his condition was as under: Lids of left eye red, swollen, and closed, but not indurated. Eyeball slightly proptosed, and

displaced somewhat downwards. Pulse 104. Temperature, 99.4° F.

The child was admitted to the hospital, where a good deal of discharge from the left nostril was noted. Hot boric fomentations were applied every four hours to the lids of the affected eye. On January 2, 1908, the urine was found to be acid, without deposit or albumin. On the following day there was great improvement in the state of the left eye. The fomentations were applied less frequently. On January 7—that is a week after admission—there was no oedema of the eyelids, and so the fomentations were discontinued. On January 28 cure appeared to be complete. During the patient's sojourn in hospital it may be said that the temperature rose above 99° F. twice only, namely, on January 1, when at 10 p.m. it reached 99.8° F., and on January 12, when the evening record stood at 101° F. The pulse during the first five days after admission ranged from 80 to 130 a minute.

5.—*Acute ethmoiditis in a child of six and a half months. Incision and evacuation of pus. Recovery.*

This lad, aged six and a half months, was admitted to the Queen's Hospital for Children on October 19, 1907, on account of swelling of the lids of the right eye, first observed ten days previously. Breast fed. No history of injury. On admission the upper and lower lids of the right eye were found to be red, swollen, and tense. There were traces of mucopurulent secretion about the lashes, but beyond redness of the ocular conjunctiva no local condition could be found to account for it. There was definite proptosis and limitation in movement of the affected eye. The cornea was clear. No disease of the naso-pharynx. No otorrhoea. Weight 16½ lbs. Temperature 99.8° F. and 102.2° F.

One grain of calomel was given, and hot lead lotion was constantly applied to the lids of the affected eye. On October 30 (eleven days after admission) the swelling of the lids was reduced. There was well-marked proptosis of the right eye. A fold of oedematous conjunctiva could be seen on everting the upper lid of the right eye, There was some slight redness of the outer canthus of the affected eye. On November 1 (12 days after admission to hospital) a curved incision, about one inch in length, was made parallel to and immediately beneath the inner end of the upper margin of the orbit under chloroform. Sinus forceps were introduced, and when their blades were separated, about a teaspoonful of pus was evacuated. The orbital roof felt bare. A drainage tube was inserted into the wound. On November 14 there was still slight proptosis, but the eyelids could be opened at will. There was a depressed cicatrix beneath the inner third of the arch of the right orbit, along with a sinus at the bottom of the cicatrix. Child able to open the eye, although the upper lid was still rather swollen. No

proptosis, but the eyeball was displaced downwards. General condition good. It may be noted that the temperature (99.8° F. at the time of operation) has exceeded the normal once only since the operation, namely, on the evening of November 10, when it reached 99° F. On November 20 the child opened the lids of the right eye nearly as well as those of the left. There was still some oedema of the right upper lid. No proptosis, and little displacement of the globe downwards. Fundi (examined under homatropin) normal. No obvious disease in the naso-pharynx or nose. On November 27, after a stay of thirty-nine days in hospital, patient discharged. The surgical cicatrix was then firm, and showed no signs of discharge.

On February 6, 1908, being then ten months of age, patient was seen among the out-patients. There was a linear cicatrix, 20mm. long, starting from the inner end of the orbit and extending over the eye. Its inner end was slightly puckered, and beneath the pucker a small hard lump was to be felt in the orbit over the position of the ethmoidal labyrinth. Slight ptosis of the right upper lid, and fulness of "covering fold." The right eye, although not proptosed and possessing good movements, was slightly divergent. The sight appeared to be good.

6.—*Acute ethmoiditis in a girl three and a half years. Resolution.*

A female, aged three and a half years, was seen on January 7, 1908, with the statement that she had been "poorly" for a fortnight, and that her left eye became affected on the 5th instant. The pulse was 120, and the temperature 100°F. There was mild follicular tonsillitis, and the glands on both sides of the neck were enlarged. The lids of the left eye were ecchymotic, but not swollen. Definite but not marked proptosis. Movements of globe deficient in all directions. No chemosis. Anterior segment of eyeball looked normal.

Child admitted to hospital, and one drachm of compound jalap powder given. The lids of the affected eye were treated with hot lead lotion, kept continuously applied. After a stay in hospital of ten days, the child was discharged. The movements of the left eye were then normal, and not a trace remained of the former ecchymosis.

7.—*Acute ethmoiditis in a boy of seven years. Discharge of pus from the nose. Resolution.*

A boy, aged seven years, was seen among the out-patients at the Kensington General Hospital in March, 1907, with symptoms of acute anterior ethmoiditis, of about thirty hours' duration. The temperature was 99° F., the pulse was 130, and the lad seemed ill. He was referred to the Queen's Hospital for Children, where he remained as an in-patient from March 6, 1907, until March 27, 1907, when he was discharged well.

On admission, the upper and lower lids of the right eye were swollen, and on separating them, the globe was seen to be pushed forwards and somewhat downwards. Slight conjunctival redness. There was photophobia, and some muco-purulent discharge among the eyelashes. The movements of the globe were very limited in all directions. The anterior segment of the eye showed no obvious changes, and the ophthalmoscopic appearances were normal. The pupil was of medium size, and reacted well to light and to convergence. The temperature was 100.8° F. Weight, 39½ lbs. There were several carious teeth in both jaws.

A purgative (Pulv. jalapae co.) was given. On the day following admission the temperature, 100.4° F. in the morning, had fallen to 97.8° F. at night, and this coincided with quite a quantity of pus, which had presumably escaped from the nose, being found on the child's pillow. A week later (March 14, 1907) the lids of the right eye were rather oedematous and semi-closed. Slight proptosis. No definite changes in the nares. Pupil reacted to light. Vision appeared to be good. Temperature has once only exceeded 99° F. since last note, namely, on the 12th, when the evening record was 99.2° F. On March 19th several carious teeth were removed. On March 27, after a stay in hospital of three weeks, patient discharged as cured.

8.—*Acute ethmoiditis in a boy of twelve years. Resolution.*

A boy of twelve years was first seen at the Queen's Hospital for Children on July 23, 1908, with the history that he awoke four days ago with pain in the right eye and corresponding side of the brow. The lids became red, and yesterday, when the pain got very great, it was noticed that the eye was pushed forward. On admission, it was observed that the lids of the right eye were in a state of inflammatory oedema, and that the eye was proptosed. Considerable limitation of movement of the eyeball. No redness of the conjunctiva. Pupil active, and V. 5/6.

The case was treated with phenacetin to relieve pain, boric fomentations to the swollen eyelids, and one drachm of the syrup of the iodide of iron was administered three times a day. When seen a week later, the lad was practically well. There was no proptosis, and the movements of the eyeball were good. The boy, however, had complained of diplopia. When seen again on September 17, 1908, there were complaints of difficulty in sight, and of some pain in the right eye. The correction of slight hypermetropic astigmatism by glasses seemed to render him quite comfortable.

9.—*Severe acute ethmoiditis in a baby of fourteen days. Incision. Recovery.*

R. M., born on January 18, 1909, developed swelling of the lids of the left eye on February 1, 1909, and next day the

corresponding eye seemed pushed out of position. There had been no discharge from the eye since the baby was born. Patient is the eighth in the family. The first four children died within four or five days of birth. The fifth child died at two and a half years from meningitis. The sixth and seventh child, aged respectively three and two years, are alive and healthy.

On admission, the lids of the left eye are red and oedematous, and the globe protrudes, so as to lie between the eyelids. The movements of the eyeball, although abolished laterally, are still present slightly in an upward and downward direction. The ocular conjunctiva is oedematous and overlaps the cornea slightly, but is of pale colour. No mastoid oedema. Pupil active to light. There is no discharge from the nose. The fundus oculi appears to be normal. Temperature, 101° F.

The baby was taken into the hospital, where castor oil was given, and boric fomentations were applied to the swollen eyelids. On February 4, 1909, the following note was made.—"Left eye. Inflammatory oedema upper and lower lid, the skin being of livid colour. Marked proptosis, practically in the axis of the orbit. Cornea covered by eyelids. Non-inflammatory swelling of the ocular conjunctiva. General condition of the baby fair. Temperature, 102° F. to 100° F. Bowels opened five times. Navel in good condition: no obvious source of sepsis. Nurse noticed pus running from the left nostril this morning."

*February* 5, 1909.—The proptosis has increased, and lids now scarcely cover the cornea. Slight purulent discharge from the left nostril. Under chloroform, an incision, about half an inch long, was made along the inner third of the upper margin of the orbit. A blunt director was introduced to the back of the orbit along the nasal side of the orbital cavity, but no pus was evacuated. The base of the inner wall seemed rough and bare, and readily yielded to the pressure of the probe. At this stage some discharge occurred from the left nostril, but soon ceased. A second incision was then made at the lower-inner margin of the orbit, and the director was again introduced. A quantity of yellowish-green pus, estimated at one or two teaspoonfuls, was evacuated. The inner surface of the floor seemed bare and rough. The upper wound was left open, and the lower wound plugged. Fomentations were applied. Temperature prior to operation, 100° F. and 100° F., was 99·2° F., 100·6° F., and 98·4° F.

*February* 6, 1909.—There is a copious discharge of greenish-brown pus from the lower incision in the orbit. Bowels freely open. Temperature, 102° F., 100·6° F., and 99·4° F. *February* 7, 1909.—Oedema of lids and proptosis less marked. The movements of the eyeball are now tolerably free. Temperature, 100·2° F and 98·4° F. *February* 8.—Proptosis and oedema considerably

reduced, and the movements of the eyeball in all directions increased in amplitude. The fold of chemotic conjunctiva which protrudes from between the lids, shows some tendency to superficial ulceration. There is a small, grey opacity just below the centre of the cornea. Temperature 99° F. and 98° F. On *February* 9.—A note was made to the effect that the condition was much better. Temperature 99° F., and 98° F. A fine probe still traverses the floor of the orbit to the inner wall, which is distinctly carious. *February* 11, 1909.—Proptosis now little marked, and the movements of the eyeballs are almost complete in all directions except outwards. There is a thick discharge from the lower wound and the left nostril, and pus can be seen in the middle meatus of the left side. The ocular conjunctiva is almost normal, although there remains a thickened fold on the left side of the cornea. The conjunctival culs-de-sac are slighly injected. Weight 6¼ lb. Temperature 99.8° F. and 98° F. On *February* 17 it was noted that discharge from the lower orbital wound had ceased, although purulent discharge from the left nostril still persisted. Slight proptosis and oedema of the eyelids present. On *February* 26 a smooth, round swelling which had developed at the posterior border of the anterior fontanelle was opened and found to contain pus. On *March* 12, after a stay of thirty-eight days, the child was made an out-patient. On *May* 6, 1909, the baby, now aged 3½ months, seemed to be well. No proptosis or squint, and movements of eye free.

10.—*Acute ethmoiditis in a boy of three and a quarter years. Two operations. Recovery.*

On June 25, 1902, I was asked by Dr. Macdonald Brown to see a boy, aged three and a quarter years. The following history was given to me: The child awoke yesterday morning complaining of headache and showing some redness and swelling of the lids of the left eye. That evening the pulse was 160 and the temperature 102° F. No cerebral symptoms.

On examination, there was marked inflammatory oedema of the lids of the left eye. Slight proptosis. Globe displaced downwards. The movements of the eyeball were defective. A good fundus reflex. With the affected eye the child could recognise an object held near him. The side of the face was a little swollen. No tonsillar or dental mischief. No obvious source of sepsis. No history of any zymotic ailment.

When seen on the next day (June 26) the symptoms were more pronounced. Temperature, 101° F. to 103° F. No mastoid oedema. More proptosis and redness and oedema of the left eyelids. Chemosis opposite the palpebral fissure. Fluctuation was thought to be present in the orbit above the left eye. Under chloroform, a curvilinear incision was made under the centre of the supra-orbital

ridge, and dressing-forceps were introduced into the wound and a little pus, mixed with blood and serum, escaped. A small drainage tube was introduced into the centre of the wound, the rest of which was sutured. On the following day, June 27, the oedema of the lower lid and corresponding side of the face was more marked. Some pus was stated to have escaped by the drainage tube, the mouth of which also contained similar fluid. Mr. Percy H. Dean, who was called in consultation, deepened the original incision and found pus, not in great quantity, at the upper and inner part of the orbit. He next incised the lower lid, at the inner end of which he also found and evacuated pus. The bone in the last-named position was bare. A drainage tube, was inserted through the lower wound, and a piece of gauze was left in the upper wound. Finally, the wounds were closed with sutures.

I did not have the opportunity of seeing the patient again, but I learned from Dr. Macdonald Brown that recovery was complete.

### Conclusions

1. In young subjects, usually under five years of age, a form of orbital inflammation or suppuration is not infrequent.
2. The condition is always unilateral.
3. There are clinical grounds for believing that an acute inflammation of the anterior ethmoidal cells is the primary condition.
4. The prognosis is good, since the condition undergoes resolution often without surgical intervention.

## A CASE OF HYALINE BODIES ON THE OPTIC DISC

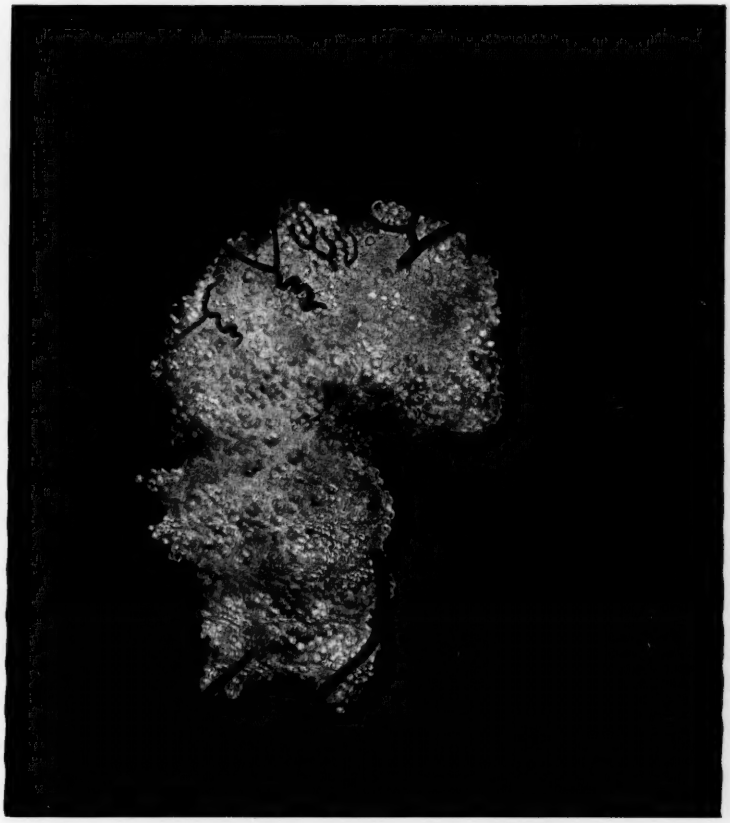
BY

G. VINER, Capt. R.A.M.C.

(*With plate.*)

No. 34844 Gnr. W—, Australian Field Artillery, aged 38, admitted to Ophthalmic Department, No. 3 General Hospital, France, November 14, 1917, with a diagnosis of shell wound of left eye.

On examination, there was a contused wound with much ecchymosis, situated on the left upper lid and eyebrow, close to the outer canthus; no foreign body present in wound and no fracture detected. Left globe intact, and all external appearances normal. L.V.=6/24 c. + 1·00 D. cyl. axis vert.=6/12. Field of vision full except in lower and nasal quadrant, where it is contracted to 45°. No central scotoma, but the blind spot appears to be distinctly larger than normal.



To illustrate CAPTAIN VINER'S CONTRIBUTION ON
"A CASE OF HYALINE BODIES ON THE OPTIC DISC."

To face page 426

*Ophthalmoscope*: The media are clear except in extreme upper temporal periphery, where there are several large vitreous haemorrhages which partially obscure an extensive concentric rupture of the choroid in this region. No part of the optic disc is visible: it is completely hidden by a lobulated mass, irregular in outline, semi-translucent and gelatinous in appearance, bluish white in colour. The mass consists of innumerable but discrete round hyaline bodies lying in front of the disc and retinal vessels; the latter are for the main part buried in the mass, emerging near its edge, and are, with two exceptions, healthy in appearance. Near the upper edge there are two small and very tortuous dilated veins coursing over the upper quarter of its surface. Two small arterial branches running from beneath the mass towards the macula present the signs of perivasculitis. There are no newly formed vessels present, and no other signs of any previous inflammatory changes in the eye. The highest plus lens which focusses the surface of the mass is 3D.

I am indebted to Sergt. Maxwell, R.A.M.C., for the excellent painting of the fundus seen by the direct method.

## A REVERSIBLE SCREEN STEREOSCOPE*

BY

A. C. HUDSON,

LONDON.

THIS instrument is a modification of one first described several years ago (*Ophthal. Rev.*, December, 1912), and exhibited at the meeting of the Ophthalmological Society of the United Kingdom in 1914.

The eye pieces consist of plane-prisms (in place of the original sphero-prisms), each of which is of 4° angle of deviation, and is mounted at the extremity of a bar bearing at its other extremity a cell to hold a diagram or picture. The bars cross one another obliquely, the degree of obliquity of the angle of crossing being determined at any moment by the position of a vertical pin which can be moved freely in an antero-posterior direction within a slot which traverses each bar longitudinally. This pin supports the screen, which, by means of a hinge mechanism, can be converted from a central narrow screen to two screens with a central aperture, and vice versâ. When the screen is disposed in the first-mentioned position, and the prisms are arranged base outwards (Fig. 1), the picture in the right-hand cell is visible to, and that in the left-hand cell screened from, the right eye, while the left eye can see only the

* Shown at the meeting of the Ophthalmological Society U.K., April, 1918.

picture in the left-hand cell: fusion of the images of the two pictures, as they are separated by approximation of the screen to the eyes, involves divergence of the visual axes. With the screen disposed in the form of two lateral wings, and the prisms placed

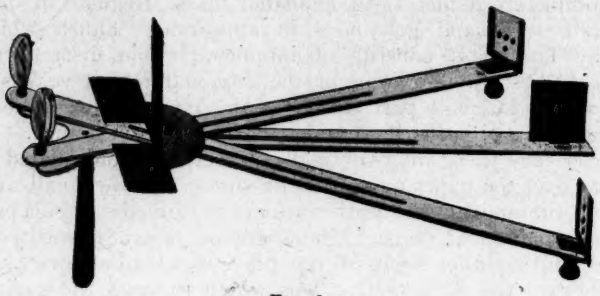


FIG. 1.

base inwards (Fig. 2), the right eye can see only the left-hand, and the left eye only the right-hand, picture; fusion of the two pictures, as they are separated by approximation of the screen to the eyes, involves convergence of the visual axes. It is obvious that we thus possess a means of utilizing the desire to maintain fusion of the

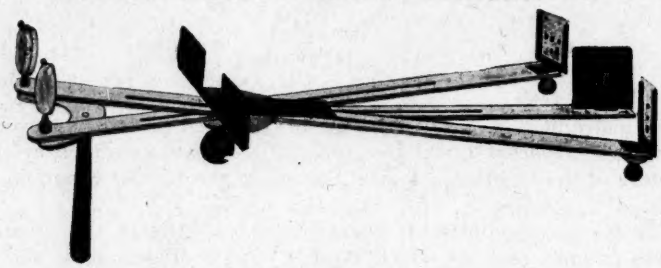


FIG. 2.

images of the two pictures, where such exists, for the purpose of producing either divergence or convergence of the visual axes, or of reducing an existing lack of parallelism.

The instrument is, in the first place, suitable for examination as to the existence and degree of binocular and stereoscopic vision, the elicitation of binocular vision being assisted, if necessary, by a use of the vertical screen between the pictures, in such a manner as to emphasize the illumination of the picture seen by the visually more defective eye, as recommended by Worth. For this examination the diagrams in Figs. 3 and 4 may be used.

In the examination and treatment of squint the arrangement of the prisms and screen should at first be such as corresponds with

the abnormality of the visual axis. When fusion of the two pictures has been obtained, if necessary with the help of the vertical screen, the desire to maintain it in spite of the alteration in the direction of the visual axes necessitated by antero-posterior movement of the screen enables exercise of the extra-ocular muscles in the appropriate

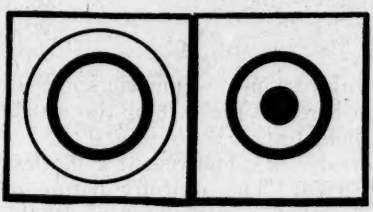


FIG. 3.

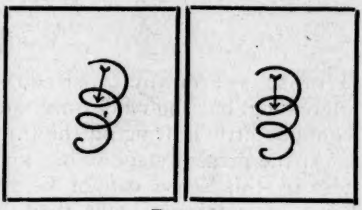


FIG. 4.

FIG. 5.

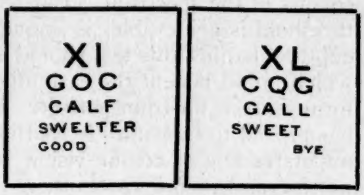



FIG. 6.

direction to be systematically carried out in response to such movement of the screen. Diagrams such as those in Fig. 3 and the various fusion pictures, such as Fig. 5, are suitable for this purpose.

Similar exercises may be practised with advantage in cases of lateral heterophoria and defective convergence.

The instrument is also very suitable for test purposes in many cases of suspected malingering, in view of the great difficulty experienced in appreciating the component portion of a fused picture recognized by each eye individually, and the ease with which any attempt to overcome this difficulty by momentary closure of one eye can be detected and circumvented by the examiner. The difficulties in the way of sustaining a false claim to defective vision may be further increased by the use of the vertical screen between the pictures in conjunction with an artificial light, in such a manner that the picture seen by the alleged defective eye is strongly illuminated, while that facing the better eye is more or less completely obscured. In a series of examinations the arrangement of the prisms and screen may be varied with advantage. The diagrams in Fig. 6, which should be constructed on the Snellen scale, afford an example of one of the many tests applicable in cases of this kind.

# THRESHOLD TESTS*

(*Concluded*)

BY

GEORGE YOUNG, M.D.,

COLCHESTER.

## PART TWO

THE subject of my paper ends with part one. I am conscious of digressing, but the reader may stop here, as the rest of the article contains little bearing on the threshold test.

At the present stage of our knowledge of colour vision, a flawless test of this sense cannot be expected. The arbitrary nature of pigments alone precludes this. The ideal test would be with the colours of the spectrum. But whether attenuating these up to their threshold is achievable, is a question which takes me beyond my depth. I think this test should suffice to get at some clinical facts which might benefit the early diagnosis of disease. The test of the form sense is far from perfect. Yet who would dispute the value it has proved to humanity? Neither the real nature of colour nor the understanding of colour vision is a fact to-day. Individuals have put forward theories and others have refuted them.

Revolving discs lend themselves to an infinite variety of very interesting and, for the present, unexplained phenomena. On that very account there must be knowledge to be gained from them. It strikes me they form a large unexplored territory for practical investigation of the physiology of human colour vision. Much that I have noticed while experimenting with all sorts of discs and colours is startling. In my humble sphere as a clinician, I can only draw attention to a few strange features. The test I suggest above, is merely the A of a new alphabet. It may or may not suffice for the clinician to distinguish the sound from the defective eye in a more or less large number of cases. Other colours, or combinations may prove useful. It is easy to add them. Who, for instance, has never been struck, on a country walk or such like occasion, by some member of the party utterly failing to distinguish violet tints in nature, which to you and all others are obvious? Who knows whether this is a symptom, or an anomaly?

I pointed out at the Oxford Congress that I had some reason to believe that human colour sensations are sometimes the product of a succession of retinal stimuli of various degrees of light intensity, differing in principle from the unequal refrangibility of light, and I showed that the disc, Fig. 5, composed of black, grey, and white, when revolved, creates colour instantly. Other

* Read at the Oxford Ophthalmological Congress, 1917.

proportions and successions yield different colours, as can easily be ascertained experimentally. To my own eyes and those of others I have examined, Fig. 5, if slowly rotated clockwise, produces the sensation of yellow in some cases (myself included), and if rotated anti-clockwise it produces the sensation of purple in all cases. This is particularly marked in artificial light, but quite plain in daylight as well. The effect cannot be one of after-images, being instantaneous, no period of fixation or retinal fatigue being required. Analyzing the clockwise action, a certain portion of the retina is successively stimulated by black, grey, and white. Yellow appears to some. Anti-clockwise the succession becomes black, white, and grey. Purple appears. Assuming black to equal absence of light stimulus or 0, grey partial or 1/2, white full or 1, formulae suggest themselves, as in this case :

(1). The succession 0, 1/2, 1 = yellow.

(2). „ „ 0, 1, 1/2 = purple.

whether one begins with (1) or (2) makes no difference, in other words (1) does not elicit (2) or vice-versâ. Neither does the direction of movement matter. Reversed test objects and such as produce the same succession if revolved one way or the other, show this.

The phenomenon of Fig. 5 may be the principle underlying the colour top of Mr. Chas. E. Benham of this city, of which illustrations are to be found in *Scientific American*, May 18, 1895, *Cassell's Family Magazine*, January, 1895, *Science*, July, 1895, *Engineering*, March 22, 1895, and others.

FIG. 5.

FIG. 6.

And, indeed, I find by modifying it in the manner of Fig. 6, in which form each of the four circles produces a succession of stimuli somewhat similar to Fig. 5, that it evokes a play of colours quite as pronounced. Probably still greater intensity could be attained if the physical laws governing these phenomena were not wrapped in mystery.

If the whole sector within the angle subtended by the black bands be given a wash of gray, the colours appear more diluted and

are more easily distinguished from one another. As figured the four colours are very deeply saturated, but can soon be differentiated. If the whole sector be painted black, the delicate variations are perhaps most pronounced. These colours resemble the subdued tints of sunset clouds much more than the luminous ones of the rainbow, and verge on neutral tints. Some find it difficult to name them, but everyone recognizes them.

In Fig. 6 I should describe the stimuli and colours as follows: (Rotating clockwise, not too rapidly, and counting the circles as 1 to 4 from the inner towards the outer.)

(1) 1/5 rest, 3/5 full, 1/5 partial stimulus=dark slate-blue.
(2) 1/5 rest, 2/5 full, 1/5 partial, 1/5 full=olive-green.
(3) 1/5 rest, 1/5 full, 1/5 partial, 2/5 full=olive-brown.
(4) 1/5 rest, 1/5 partial, 3/5 full stimulus=purple.

When rotated anti-clockwise the same succession of stimuli takes place if one counts from the outer circle towards the inner one. The whole principle is exactly reversed. The colours should therefore also appear reversed. And so they do. There is sufficient analogy between each ring of Fig. 6 and the ring in Fig. 5 to conclude that whatever they do to the human retina is one and the same thing. There is very close similarity between the effect produced on my eyes (and those of others) by Fig. 6 and the effect produced by the Benham top. I take it that Fig. 5 illustrates the principle of the latter in its most primitive form. It hardly explains it, unless the theory I ventured to put forth is tenable, that a succession of stimuli of various intensity is one cause of human colour vision. Even if this were proved, the actual physiological process in the retina would still remain a puzzle.

FIG. 7.

Types of discs like Fig. 7, also with fewer black sectors, yield regular kaleidoscopes, and when rotation ceases appear to move in the reversed sense. Fig. 7 appears to flicker at the centre, like the beginning of an attack of scotoma scintillans, when one fixes a point more or less remote from the centre. This flickering is very

apparent to me, while reading the text in its neighbourhood, and it distinctly evokes colour sensations of purple and yellow. Although the object is not in motion, it seems probable that the minute oscillations of the eye result in the same retinal area being alternately stimulated by a black or white sector. I cannot pretend to place on a solid scientific foundation any of these, or many other such phenomena that all will meet with in experimenting with revolving discs. My knowledge is quite inadequate to such a task. But that there is fruitful soil here I have no doubt.

As a clinician I mean to continue exploring the thresholds for clinical purposes. The question to decide, as far as our work is concerned, is: Does studying the threshold of light and colour lead to diagnostic signs, and what are they? This can be settled empirically. Quantities of tests, quantities of earnest collaborators, will reveal the scope and the limitations of this method.*

## ANNOTATIONS

### A Ministry of Health

Our readers have doubtless followed with interest the discussions which have recently taken place with regard to the establishment of a Ministry of Health. As ophthalmologists, and therefore somewhat wrapt up in our own special affairs, it behoves us to make active efforts to keep in touch with all movements which affect the welfare of the medical profession as a whole. The establishment of a Ministry of Health involves the solution of two great problems. Matters relating to the health of the nation are at present dealt with by a large number of Government Departments, and the first problem, preparatory in its nature, is the correlation of these sectional interests and their co-ordination under a single administration. This is the work of the departments concerned; but the success of the new Ministry will depend largely upon the obliteration of inter-departmental jealousies and the adoption of well-considered plans for the division of the administrative labours. In drawing up such plans the authorities will be well advised to consult those leading members of the profession whose experience and good judgment endow their opinions with peculiar weight on the several questions requiring consideration.

* In a case of Daltonism the palest red and green evoked colour sensations. They were called "brown," but differed from one another. They were pronounced as differing entirely from the neutral page or the grey spots, because "these are not colours and those are." Apparently his colour thresholds for red and green are normal, though he fails in the simplest test for colour blindness.

The second great problem includes the general policy to be adopted by such a Ministry and the innumerable details of reconstruction which the carrying out of that policy necessitates. The project of a Ministry of Health is being borne gaily along upon the great wave of reconstructive enthusiasm. It appeals to many as a panacea for all our discontents. Schemes of reconstruction too often give rein to revolutionary ideas, Utopian in their idealism. Unless they are held in check by the teachings of history and experience the clash of rival theories destroys concerted action and a noisy minority obtains control, with disastrous results.

Most of the discussions which have as yet taken place have given evidence of much unpractical theorisation and of divergent or even mutually destructive principles. They have been lacking in the responsibility of constructive statesmanship, which is wholesomely restrained in its architectural experiments by the necessity of making its bricks out of the materials which are available. Hence it would be wise for the medical profession to come down to earth and start seriously to work. We need not dwell upon the political failures of medicine in the not distant past, but we should not ignore the lessons which we ought to have learnt from them. The chief of these is our lack of organization for political purposes. We have many very efficient teaching establishments, qualifying bodies, and scientific societies, but for one reason or another—mostly quite sound reasons—none of them has assumed more than a merely parochial responsibility for the medical welfare of the State, a responsibility limited to its own alumni, its own localised branch of medicine, and so on.

Now, the first requirement of political organization is proper representation of sectional interests. Our own branch of medicine has recently set up a body, the Council of British Ophthalmologists, which is intended to be truly representative. Time alone will show whether this aspiration is justified, but if it is, public bodies, whether governmental or otherwise, have in this Council an authoritative source of information on all matters relating to the public welfare which involve questions of ophthalmological interest. Whether the Council would be prepared to suggest advisory representatives if requested to do so is a matter for their careful consideration, but in any case they afford a satisfactory medium of communication.

We cannot refrain from expressing the opinion that other branches of medicine might well follow the lead of the British ophthalmologists. Doubtless the constitution of representative bodies of medicine, surgery, general practitioners, and so on, would reveal difficulties which do not exist in such acute form in the representation of a speciality, but the difficulties are not insuperable. If success were attained the machinery would be set up for obtaining a real, instead of a haphazard, representation of British medicine as a whole.

## Optometry in Ontario

From an article by Dr. John Ferguson in a recent number (May, 1918) of the *Canada Lancet*, we gather that Mr. Justice Hodgins, who was commissioned to enquire into medical education in the widest sense of the words, as well as into "the present position, status, and practice of osteopaths, dentists, nurses, opticians, optometrists, chiropractors, christian scientists, or others practising or professing medicine," has issued his report. In this place we can glance only at the views and recommendations of the Commissioner upon optometry, to which we are confident that the medical profession will take, and rightly take, serious exception. In dealing with this branch of the enquiry, the report states that in Ontario there are only sixty-five men who specialize in ophthalmology, while there are nine hundred who practise optometry. It explains the number of optometrists by the fact that the course so far required for optometry has been so short and easy that many have taken it, and attached the business to that of a jeweller. On the other hand, his lordship remarks, "that in a medical education there is no sufficient specific instruction in this branch. . . This should be remedied." He comments upon the circumstance that few medical men are able to do refraction with accuracy, and on that score explains why this field of practice has been so extensively invaded by the poorly trained optician and optometrist. After referring to the need of better training in ophthalmology for medical men, Mr. Justice Hodgins says he sees no reason why optometry should not acquire a definite status "if it is willing to do so at the cost of such liberal education as will fit its practitioners for their work." He goes on to state, "It is quite possible to insist upon adequate education in physics and optics, apart from a complete medical education, so as to enable those possessing it to measure and design the lenses required for defective eyesight in ordinary cases. In the instances where the effect is based upon other causes than those usually found to exist, the procuring of glasses may, by affording temporary relief, postpone to the patient's detriment the treatment properly required, but these cases are comparatively rare. The difficulty can be met in large measure by adding to the course in physics and optics sufficient instruction in medicine to enable abnormal conditions to be distinguished either at once or speedily, and sufficient protection is afforded by a provision to this end in any legislation affecting what is called optometry." It is suggested that the course for optometrists might be one of two years, and that the object aimed at should be threefold: (1) Sufficient knowledge of medicine to detect disease in the body disclosed or indicated by the eye. (2) Acquaintance with the physiology and pathology of the eye itself adequate to recognize local

disease, and (3) a thorough knowledge of practical optics and refraction. It is pointed out that there are ample facilities for the required instruction at the Universities of Toronto, Kingston and London, and at the Toronto Technical School. Finally, the report recommends that all who at present practise optometry should be required to pass the suggested examination within six months.

## ABSTRACTS

### SYMPATHETIC OPHTHALMITIS

(1) **Meller, J. (Vienna).—On the histology of the exciting eyes in the onset of sympathetic ophthalmia after enucleation. (Ueber den histologischen Befund in sympathisierenden Augen bei Ausbruch der sympathischen Ophthalmie nach der Enucleation.)** *Arch. f. Ophthal.*, Vol. LXXIX, Pt. 1, 1914.

(1) Meller gives an account of seven cases, some of which have been published previously, in which sympathetic ophthalmia followed at varying intervals after the removal of the injured eye. The main points of the cases are as follows:

CASE 1.—Enucleation eighteen days after injury; sympathetic ophthalmia twelve days after enucleation ran a severe course. Removed eye showed septic endophthalmitis, abscess in vitreous, choroid free, infiltration in iris and ciliary body, not typical of sympathetic.

CASE 2.—Enucleation thirty days after injury; sympathetic ophthalmia twenty-seven days after enucleation ran a severe course. Histology that of a serous iritis. Uncharacteristic infiltration of iris (everywhere penetrating the pigment layer) and ciliary body. Quite small nodules of lymphocytes in choroid. Neuritis.

CASE 3.—Enucleation twenty-eight days after injury; sympathetic ophthalmia thirty-eight days after enucleation ran a mild course with preservation of normal vision. Histology, early stage of sympathetic inflammation. Numerous choroidal nodules. Nothing characteristic in iris and ciliary body. No definite epithelioid cells. No endophthalmitis. Marked neuritis.

CASE 4.—Enucleation thirty days after injury; sympathetic ophthalmia nineteen days after enucleation ran a severe course, but final result was good. Histology, lymphocyte nodules in posterior layers of iris and ciliary body as well as the anterior part of the choroid. No epithelioid or giant cells. Slight endophthalmitis. Neuritis.

CASE 5.—Enucleation thirty-eight days after injury; sympathetic ophthalmia three days after enucleation ran a mild course with preservation of normal vision. Histology typical with epithelioid and giant cells in iris and ciliary body, only quite small lymphocyte nodules in choroid. Slight endophthalmitis and no neuritis.

CASE 6.—Enucleation sixty-three days after injury; sympathetic ophthalmia eight days after enucleation, course of disease unknown. Histology, characteristic picture of sympathetic ophthalmia.

CASE 7.—Enucleation thirty-one days after injury; sympathetic ophthalmia four days after enucleation ran a severe course. Histology, characteristic picture of sympathetic ophthalmia.

Meller draws the following conclusions:

A sympathetic ophthalmia that makes its appearance after enucleation may be mild or severe. The degree of inflammation reached by the exciting eye bears no relation to the severity of the affection in the second eye. There would also seem to be no definite relation between the severity of the disease and the interval between the removal of the eye and the outbreak of sympathetic inflammation. When sympathetic inflammation follows the enucleation early, the exciting eye will be found in a more advanced stage of the disease than in those cases in which a longer period intervenes.

E. E. H.

(2) **Meller, J (Vienna).—On necrosis in sympathetic inflammation. (Ueber Nekrose bei sympathisierender Entzündung.)** *Arch. f. Ophthal.*, Vol. LXXXIX, Part ii, 1915.

(2) **Meller** records two cases of sympathetic ophthalmia which occurred after perforating injury in the eyes of girls at intervals of three and six weeks respectively. The reports of the clinical condition need not detain us, save to notice that the final result was the worst possible: absolute blindness. Histologically there was found in the neighbourhood of the iris and ciliary body in both eyes, a large tumour composed of granulation tissue, small round cells with numerous foci of epithelioid and giant cells, some of the Langhans type. The centre part of these foci was largely composed of necrotic detritus. Vascular obliteration was also a marked feature in the sections. The retina in each case was detached, thickened, and infiltrated with inflammatory cells, while the choroid in its posterior part was grossly thickened, the foci of epithelioid and giant cells having seemed to coalesce in this region. In each optic nerve, 6.8 mm. behind the globe, was found a focus of epithelioid cells. von Pirquet's test was negative in each case.

Meller discusses the points in comparison between sympathetic ophthalmia and uveal tuberculosis, remarking that each is frequently of an especially severe type in children. The occurrence of slight trauma is insisted on as a starting point of tuberculous iridocyclitis.

The histological findings in his cases showed a remarkable similarity to those of advanced tuberculous disease, although it was impossible to demonstrate the tubercle bacillus. Finally, he considers that his cases are much in favour of the bacterial origin of sympathetic ophthalmia. The gross lesions are well shown in the accompanying illustrations, while there are two fine plates of the microscopical features.

R. R. JAMES.

(3) **Meller, J. (Vienna).—Sympathetic type of inflammation without affection of the second eye. (Sympathisierende Entzündung ohne Erkrankung des zweiten Auges.)** *Arch. f. Ophthal.*, Vol. LXXXIX, Pt. iii, 1915.

(3) **Meller** points out the rarity of the occurrence of the typical sympathetic inflammation in a wounded eye without involvement of the second one. Fuchs, after a great number of examinations, found only two cases of this sort. In this communication, Meller gives details of two cases.

CASE 1.—A man, aged 73, had his eye injured by the finger-nail of his daughter when applying a lotion in the treatment of a catarrh. The sight was lost. Twenty-five years later the sight of the fellow eye failed. When he first came under observation the right eye showed a corneal scar, 1 cm. long, parallel to the outer and upper margin of the cornea, to which the atrophic iris was adherent. The anterior chamber was only present below. The cornea was too opaque to permit any view of the fundus. Vision was reduced to perception of light at 6 m.; projection accurate. The left eye had a pressure of +1, although the pupil was reduced to a pin's head size by the previous use of eserin. Vision 6/24. The diagnosis of chronic inflammatory glaucoma was followed by a successful iridectomy, and the eye remained sound, eight months later, with a pale and excavated disc. Three days after the iridectomy on the left eye an iridectomy was also performed on the right. During the performance of this second operation a fragment of lens matter escaped. The eye healed without any complication. Seven months later the patient returned, as the eye had become painful and blind. Tension was now subnormal, cornea rough and opaque, and as there was no perception of light, the eye was removed.

Histological examination showed evidence of two distinct inflammatory processes, the one old and confined to the cornea, iris, and superficial parts of the ciliary body, the other more recent, chiefly affecting the choroid. While the older inflammation was chiefly indicated by the formation of connective tissue membranes, the more recent one was of the typical sympathetic form with epithelioid cells and cell nests.

CASE 2.—A man, aged 52 years, had a perforating injury of his left eye from a fragment of metal. When first seen the upper lid was penetrated, and underneath this was a wound in the sclera, 1 cm. long, which reached the limbus in a vertical direction. There was prolapse of the iris, and the anterior chamber was deep and contained some blood. The eye was soft and perception of light was lost. A piece of iron, 1 cm. long and 8 mm. broad, was removed through the scleral wound with the small magnet and the prolapsed iris was cut off. The eye never quieted down and was excised a month later. The right eye remained normal.

Beside the usual inflammatory appearances that resulted from the injury, the interest of the histological examination from the point of view of the present paper chiefly centred in the area which had been directly injured by the fragment. This lay close to the papilla. The retina and choroid were here torn and their edges entangled in a layer of tissue several mm. broad, which consisted of a thick connective tissue with remains of blood and containing several clumps of fresh infiltrate. The centre of these clumps was composed of epithelioid cells and the periphery of leucocytes. There were also occasional giant cells of the Langhans type. No tubercle bacilli could be detected, nor was any caseation present.

Meller considers that the fact that the uveal tract was unaffected, the typical inflammation being confined to the area described above, renders it doubtful whether this case should be included as of a true sympathetic type.

Meller considers that the occasional occurrence of such cases in no way opposes his theory as to the source of the infection being one that exists in the whole body, for just as in other general diseases that usually affect both eyes, one occasionally escapes, it is only reasonable to suppose that the injured eye should occasionally be the only one to sufier.

Microscope drawings of the appearances met with accompany the paper.

E. E. H.

(4) **Meller, J. (Vienna).—The histology of sympathetic ophthalmia. (Zur Histologie der Ophthalmia sympathica.)** *Arch. f. Ophthal.*, Vol. LXXXIX., Part iii, 1916.

(4) **Meller** in this paper gives details of the examination of a sympathising eye in one case of sympathetic ophthalmia. He points out that there have been published very few accounts of the pathological examination of the second eye, and that it is of considerable interest to note how far the microscopical appearances resemble those of the much more frequently examined exciter. His case was briefly as follows.—A man of 38 with penetrating injury of right eye. Four weeks later removal of traumatic cataract.

Six months later sympathetic ophthalmia developed and the right eye was excised. Under treatment the left eye improved and regained normal vision, but relapsed three and a half years later. Improvement again followed treatment, but relapses kept occurring, until, finally, the eye became blind and painful, and had to be removed some ten years after the original injury. The usual picture of sympathetic inflammation was found in the excised eye.

Meller draws attention to some details.—1. The share taken in the process by the different parts of the uveal tract. The iris was most affected, the infiltration breaking through the pigment layer and spreading out behind, but, in spite of the long duration of the affection, the anterior layer still remained as a clear brown stripe. The ciliary body showed less sign of inflammatory change and the choroid was least affected, but all the changes were of the typical character. 2. Some conclusion as to the age of the process was to be derived from the changes in the stroma. Thus, while the cell clusters in the ciliary body and choroid were embedded in normal stroma, those in the iris lay in an altered fibrous tissue which was the result of the organization of the sympathetic infiltrate. Meller considers that this shows that during the earlier years the affection had been confined to the iris, and had only reached the posterior parts of the uvea during the final period of the disease. 3. While he considers that the fibrous tissue layers that covered the posterior part of the iris were part of the sympathetic process itself, the membrane on the anterior surface he attributed to plastic exudation. Plastic exudation of this type is only to be found in severe or lengthy cases of the disease. 4. There was necrosis of the pupillary part of the iris. This Meller considers to be due to the cutting off of vascular supply as a consequence of the severe infiltration of the peripheral part in which the blood-vessels were particularly affected. 5. The lengthy course of the affection is to be explained by the outbreak of fresh foci of infiltration at various intervals. A considerable period may elapse between the various relapses.

E. E. H.

(5) **Shoemaker, W. A. (St. Louis).—Concerning the diagnosis of sympathetic ophthalmia. Report of a case.** *American Journal of Ophthal.*, December, 1916.

(5) The case reported by **Shoemaker**, was presented to a meeting of the St. Louis Ophthalmological Society with a view to elicit the opinion of the Society. There is, unfortunately, no record of any such opinion having been given.

The question asked by the author is whether if the "lost" eye presents no symptoms of inflammation whatever, one is justified in straightway removing it on the appearance of symptoms which may or may not be referable to sympathetic disease in the fellow eye,

especially when the cosmetic effect of the "lost" eye is better than that of a prothesis. It is Shoemaker's opinion that when the lost eye is quiet we are not justified in making a diagnosis of sympathetic ophthalmia simply because the good eye has been attacked by uveitis or neuro-retinitis. But, as showing the difficulty of acting always according to conviction in these extremely difficult circumstances, in this case Shoemaker, although unable to make a diagnosis of sympathetic either before or after the event, nevertheless excised the blind eye, in order to be on the safe side, as, indeed, most other surgeons would have done.

The case was that of a boy, aged 14 years, who had lost the sight of the right eye through a scissors injury when one year old. Vision had always been good in the left eye until three days before consulting Shoemaker, when blurring of sight came on and increased. With V.A. at 13/100, there was found to be quite a severe neuro-retinitis with a few small exudates in the retina and minute haemorrhages on the disc and in the retina. The uveal tract did not seem to be involved. The blind eye had never given any discomfort or been sensitive to touch. The wound was on the limbus and involved the iris and lens. The eye was absolutely without inflammatory symptoms, somewhat smaller than the left, and cosmetically better than an artificial eye. No perception of light. Wassermann negative. The patient was then referred to Sluder who found a left hyperplastic and a right purulent sphenoiditis. Sluder, however, did not feel justified in positively ascribing the ocular condition to the sphenoidal inflammation, and the right eye was excised. Large doses of sodium salcylate were given, along with mercurial inunction. One week after the excision there was no change in the condition of the left eye. Sluder then operated on the left sphenoid. Three days later V.A. was 13/100. From this time the V.A. progressively improved to 13/15 about one month afterwards. The ophthalmoscopic appearances also progressively improved. Shoemaker says, "Results seem to indicate that the blind eye was not the source of the trouble, and that the sphenoiditis was. The question is, was I justified in removing the blind eye with the diagnosis in doubt?"

The microscopic examination was made by Alt and is given in detail in the article. Briefly, Alt considered that a severe infective inflammatory process must have followed the injury. This seems to have remained particularly chronic and virulent in the posterior part of the eyeball. The peculiar signs given by Fuchs as characteristic of an eye which is likely to produce sympathetic ophthalmia were altogether wanting. Alt considers it doubtful whether the optic neuritis in the fellow eye could be looked upon as being of a sympathetic character.

ERNEST THOMSON.

(6) **v. Hippel, E. (Göttingen).—On tuberculous, sympathetic and proliferating uveitis of unknown aetiology. (Ueber tuberkulöse, sympathisierende und proliferierende Uveitis unbekannter Aetiologie.)** *Arch. f. Ophthal.*, Vol. XCII, Pt. iv, 1917.

(6) In a long and diffuse paper **v. Hippel** describes the microscopical anatomy of a number of cases of chronic uveitis in which the appearances resembled those of tuberculosis. The individual descriptions contain many points of pathological interest which could not well be set out in the space of an abstract. Numerous illustrations are given in the text, and two plates accompany the paper. v. Hippel does not agree with Meller in admitting that there is always a sharp differentiation between tuberculous and sympathetic uveitis. He quotes cases bearing on this point and says that the differentiation of the two affections by the microscope is quite impossible, and is only to be made by reason of the history of a perforating injury in the latter.

He expresses some doubt as to whether the tubercle bacillus may not be the cause of sympathetic ophthalmia. He considers that there may be a third as yet unknown cause of uveal inflammation, of a type resembling that of the tuberculous and sympathetic forms. One of the cases described shows that there may exist a chronic choroiditis without any injury to the pigment epithelium, and, consequently, not to be seen with the ophthalmoscope. As a result there may be a toxic disturbance of the outer layers of the retina, which, however, is likely to be recovered from.

E. E. H.

(7) **Poulard, Albert.—Traumatic sympathetic ophthalmia. (Ophtalmie sympathique traumatique.)** *Ann. d'Ocul.*, Vol. CLIV, December, 1917.

(7) At a meeting of the Ophthalmological Society of Paris, in April, 1916, **Poulard** delivered himself of some remarks on the rarity of sympathetic ophthalmia, and upon the unnecessarily severe operation of enucleation as generally practised in the interests of the second eye. He reaffirms his position in the present paper, deplores the bad cosmetic results of enucleation as compared with the good results of partial ablation, and gives as his evidence of the rarity of the disease, that he had been discussing the matter with a layman who devoted most of his time to philanthropic work among the blind, and who knew of only one case in the present war, and that was a case following operation for traumatic cataract. Poulard himself had seen only one case, which he publishes separately, that of Lieut. D. (see No. 9). He hopes that his remarks may lead to a just appreciation of the real infrequency of the disease, and to a considerable reduction in the number of the surgical mutilations

resorted to by the generality of ophthalmic surgeons. He does not mention the compensatory advantage of enucleation in providing material for necessary pathological study.

W. C. SOUTER.

(8) **Poulard, Albert.—Abnormal sympathetic ophthalmia. (Ophtalmie sympathique anormale.)** *Ann. d'Ocul.*, Vol. CLIV, December, 1917.

(8) This case is published because sympathetic ophthalmia came on four months after a preventive enucleation. Lieut. D. was wounded on the right eye by a piece of shell on April 30, 1915. The eye was noted on May 11 as painful, of soft tension, showing a hyphaema, and, by radiography, an intra-ocular foreign body. On June 9 enucleation was done. At the end of September the sight of the left eye, which hitherto had kept perfect, began to fail, and the lieutenant, on his way to Marseilles, consulted Poulard. On October 1, L.V. was 1/4; much floating vitreous opacity and very slight signs of iritis present; fundus showed peripheral choroiditis with small brownish spots or patches. Front part of globe was now searched minutely for any possible foreign body entrance wound, but none could be found; no pain or redness. On October 12, more vitreous opacity, iris now markedly affected, with pupillary exudates and synechiae; two small spots of corneal infiltration; pain trifling; tension normal; V.=1/5.

From October 12 to end of November, generally worse with relapses; signs of iridocyclitis without "keratitis punctata," but with moderate infiltration of two parts of cornea; rather more reaction; pain moderate; T.n.; gradual fall in vision. Early in December, sharper attack of iritis, with severe injection and more pain; V. almost quite gone. After eight days attack subsides. January 2, 1916, eye quiet and painless, but V. quite gone; occasional slight transitory redness; pupil moderately dilated, synechiae almost all round; colour of iris duller; no fundus view owing to pupillary exudate. July 28, 1917, eyeball small and atrophic, upper lid depressed and some ptosis; slight redness; cornea small, but iris and pupil can still be made out; surface of iris dull and covered with prominences and depressions; area of pupil retracted, occupied by whitish patch to which iris is adherent as a complete irregularly circular synechia. Every 10-15 days slight attacks of iridocyclitis come with slight redness of globe but without pain.

In brief—wounded April 30, 1915; enucleation June 9, 1915, i.e., 1 month and 10 days after the wounding; L.V. intact from June 9 to end of September—a period of 4 months; loss of vision from September 30 to December 1, i.e., 2 months.

In recording this case Poulard makes no mention of the blood reaction or of the general condition of the patient, nor was the first

eye examined with the microscope, details of all of which would require to be given before the case could be accepted as one of sympathetic ophthalmia.

W. C. SOUTER.

(9) **Morax, V. (Paris).—Clinical and statistical notes on sympathetic ophthalmia in the Army. (Notes cliniques et statistiques sur l'ophtalmie sympathique aux armées.)** *Ann. d'Ocul.*, Vol. CLIV, December, 1917.

(9) This valuable paper by **Morax** is a compilation of the findings derived from an interrogatory addressed by himself to a large number of ophthalmic surgeons doing military work in France, a list including such well-known names as Aubineau, Cantonnet, Chaillous, Chevallereau, Coutela, Dor, Dupuy-Dutemps, Frenkel, Kalt, Galezowski, Lagrange, de Lapersonne, Petit, Rochon-Duvigneaud, Rollet, van Schevensteen, Valude, and others. Special attention is directed to certain points, while a four-page table is given with all these facts observed in the 39 cases collected in France in the present war.

*Character of the initial wound.*—In all cases, except one in which sympathetic ophthalmia came on after iridocyclitis following perforation of a corneal ulcer, there had been a penetrating wound of cornea or anterior part of sclera, usually (31 cases) penetration by fragment of bullet, shrapnel or bomb, or in a small number of cases (4) accidental puncture, or in 3 cases (2 cataract, 1 iridectomy) operative interference. In a good many of the cases iris or ciliary body prolapse is noted, incarceration 14 times at least, while an intra-ocular foreign body was present in 10 of the 39 cases. Sympathetic ophthalmia coming on after intervention may be due to the original injury rather than to the operation, but in one contusion case the operation for traumatic cataract was followed by sympathetic. No pure contusion case had been followed by the disease, which would support the usual theory of infection and negative the anaphylactic theory of Elschnig.

*Rôle of the operations practised before the appearance of the sympathetic accident.*—Interventions undertaken with the object of preventing immediate infection or sympathetic infection, viz., conjunctival flaps, resection of iris, etc., or evisceration and enucleation. The accompanying table shows the number of days after the trauma when the operation was done, and the number of days after operation before sympathetic disease appeared.

All the operations except 2 (1 resection of iris and 1 evisceration) had been done from 15-69 days after the infecting trauma. Of the 13 cases where evisceration or enucleation was done 11 (4 serious, 7 benign cases) developed sympathetic within 1 month, one at 41 days and one at 3 months. The 41 days' case, Cantonnet's, had a partially positive Wassermann reaction, which takes away from

| Operation. | No. of days after trauma. | No. of days elapsed before sympathetic appeared. |
|---|---|---|
| Conjunctival flap ... ... ... ... | 28 days | 50 days |
| ,, ,, ... ... ... ... | 2 months | 9 days |
| ,, ,, ... ... ... ... | 1 month | ? |
| ,, ,, ... ... ... ... | 27 days | 2 days |
| Resection of iris ... ... ... ... | 1 month | 31 days |
| ,, ,, ... ... ... ... | 24 hours | 32 days |
| Ablation of anterior segment ... ... | 48 days | 3 months |
| Evisceration or exenteration ... ... | 57 days | 1 month |
| ,, ,, ... ... ... | 4 days | 1 month |
| Enucleation ... ... ... ... | 32 days | 12 days |
| ,, ... ... ... ... | 14 days | 22 days |
| ,, ... ... ... ... | 15-20 days | 1 month |
| ,, ... ... ... ... | 58 days | 2 days |
| ,, ... ... ... ... | 33 days | 10 days |
| ,, ... ... ... ... | 39 days | 16 days |
| ,, ... ... ... ... | 69 days | 41 days |
| ,, ... ... ... ... | 46 days | 3 days |
| ,, ... ... ... ... | 45 days | 17 days |
| ,, ... ... ... ... | 40 days | 3 months |
| ,, ... ... ... ... | 31 days | 2 days |

the value of the case, while the enucleated eye was apparently not examined microscopically. The man was aged 36, on January 8, 1916, an intra-ocular f.b., traumatic cataract—defective projection; May 15, cataract extracted, V. with + 11D. Sph. = 0·1. On September 4, iridocyclitis, enucleation that day, piece of steel found in the ciliary body. On December 15, 1916 (three months and eleven days after enucleation and eleven months after the trauma), right eye affected, 1-2 synechiae, slight keratitis punctata and ciliary injection, fundus normal, V.=0·9. fell to 1/50, then up to 0·4 on September 25, 1917; still slightly red, urine normal, Wassermann as stated.

The other (three months) case is that of Poulard's, Lieut. D., noticed separately (see No. 9), where the evolution of the sympathetic disease is so different from the classical that Morax doubts the true nature of this case, where also the globe was not examined microscopically.

*Period elapsed between the trauma and the appearance of objective signs of sympathetic disease.*—Essentially variable, it has a minimum of fifteen days and a maximum of many, even twenty-five, years if one can believe some published cases where anatomical proof is wanting. Of the 39 cases there were:

Three where latent period did not exceed 15-20 days, and one case in which it lasted for 7½ months.

One has to fear sympathetic in the first three months, especially in the second month, after the third month it is exceptional. One rule emerging is that excision of the injured eye carried out within the first fortnight, will assuredly prevent the development of sympathetic ophthalmia. Morax agrees with Kalt that evisceration of the globe ought to be rejected, and Morax would add, because, done even four days after the trauma, it failed to prevent sympathetic in Kalt's case.

*Clinical Characters of the sympathetic disease.*—An analysis of the signs and symptoms in the cases does not allow of a prognostication of the disease in a particular case. The eye generally keeps irritable, dreads the light and is tender, but a number of eyes enucleated in that condition fail to show the characteristic uveal changes of the disease and, therefore, are not dangerous. Of the 39 cases, 31 had in the second eye the characters of an iridocyclitis or an iridochoroiditis, and 8 had those of oedematous neuritis, papillitis, sympathetic optic neuritis with choroiditis. The tension varies a great deal.

*Evolution- and End-Result.*—Evolution is capricious, a cure may occur in some weeks or take a whole year; great destruction of globe may ensue with lowered or increased tension or atrophy. What struck Morax most was the predominance of benign cases.

Blindness, or practical blindness in 12 cases.
Vision 1/10 in one case.

Suicide in one case, i.e., 14 serious cases in 39.
Vision of 5/10—10/10 in 20 cases.

Vision of 3/10—4/10 in five cases, i.e., 25 cases of favourable ending.

*Conclusions.*—In the war period de Lapersonne had seen one military and two civil cases, Sexe one military and two civil, Sourdille no case in more than 3,000 military wounded, but five in civil practice, three of which ended in blindness.

At the Lariboisière Ophthalmic Centre, from September, 1914, to November 23, 1917, there had been seen 6,265 military cases, with

only one sympathetic, and 23,832 civil cases, with five cases of the disease, of which one ended in blindness, three in full vision, and one in 5/10 vision—thanks to mercurial injections and novarseno-benzol intravenously and enucleation. All 5 cases had the first eye examined microscopically and the characteristic picture confirmed, one case of injury with copper fragment developing sympathetic 25 months after the injury.

W. C. SOUTER.

## BOOK NOTICE

**Atlas d'Ophtalmoscopie de Guerre.** By Prof. FÉLIX LAGRANGE, Bordeaux. Text in French and English. 100 plates, 20 of which are coloured. Paris: Masson & Co. 1918.

This atlas of ophthalmoscopic drawings forms an admirable supplement to Prof. Lagrange's book in the "Horizon" series, which has been translated into English under the titles "Fractures of the Orbit and Injuries to the Eye in War." Both book and atlas are the only works of this nature available to ophthalmologists of the allied nations. A more elaborate, but less comprehensive, treatise on war injuries of the eye, with ophthalmoscopic and other plates, is being published in expensive fasciculi in Germany. The author is von Szili, of Freiburg-im-Breisgau. Needless to remark, it can only be obtained with great difficulty.*

Prof. Lagrange's atlas is preceded by an introduction, which gives an epitome of the chief results of his observations, already recorded in greater detail in his earlier book. The plates are classified in six categories: (1) Lesions of the deep membranes, retina, and choroid, produced by concussion; (2) lesions of the optic foramen by injury to the frontal region and radiating fracture of the roof of the orbit; (3) macular and paramacular lesions due to concussion of the facial bones without direct injury to the orbit; (4) macular and paramacular lesions by concussion combined with peripheral lesions due to actual contact, caused by a missile passing through the face and fracturing the orbit; (5) lesions of the deep membranes by missiles entering or traversing the orbit behind the globe without actually touching the eyeball; (6) lesions of the deep membranes by direct or indirect contusions of the eyeball itself.

* There is an excellent review of the first part of this work in the July number of the *Medical Supplement to the Daily Review of the Foreign Press*. A review of the second part will appear in the September number of the same publication, which can now be obtained without restriction from H.M. Stationery Office.

As may be readily imagined, there is considerable overlapping in this method of classification, and a large number of the plates reproduce the same type of lesion with but trivial variation. The coloured plates are excellent, and we think the atlas would have been more useful if many of the black and white drawings had been sacrificed in favour of a larger number of the coloured variety. Each plate is accompanied by a short account of the history of the case. The whole of the letterpress appears in both French and English, but the translation leaves much to be desired. The most striking war injuries depicted are cases of "proliferating retino-choroiditis," due to ruptures of both retina and choroid, followed by proliferation of dense masses of fibrous tissue, and of avulsion of the optic nerve in the neighbourhood of the disc. Both lesions are rare in injuries received in civil life, whereas the macular and other changes are of more familiar types.

Prof. Lagrange has been indefatigable in recording his military experiences. His works form an excellent and reliable introduction to the study of military ophthalmic surgery and may be cordially recommended.

J. HERBERT PARSONS.